Fish and Game Commission
Meeting Binder

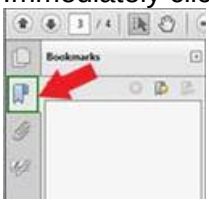
June 10-11, 2015

Commission Meeting

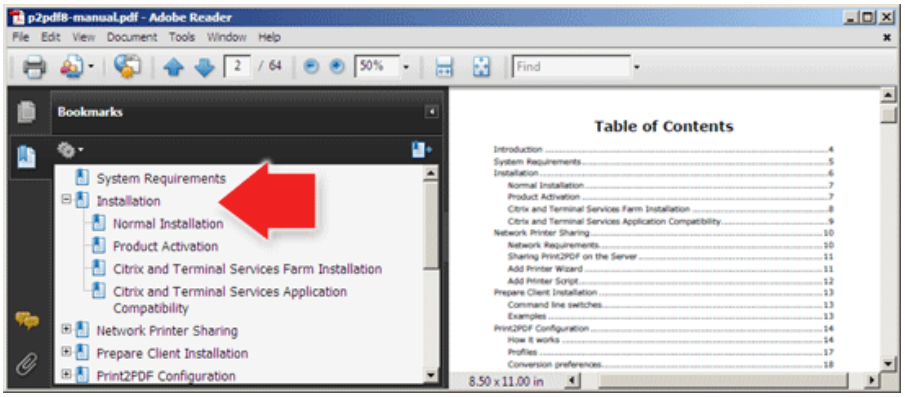
EASY GUIDE TO THE BINDER

1. Download and open the binder document using your Adobe Acrobat program/application.

2. Immediately click/tap on the “bookmark symbol” located near the top left-hand corner.



3. A bookmark panel should appear on either the top or the left-hand side of the screen. To make adjustments, simply use the Page Display option in the View tab. If done correctly, you should see something like:



4. We suggest leaving open the bookmark panel to help you move efficiently among the analysis sheets and supporting documents included in the binder. It’s helpful to think of these bookmarks as a table of contents which allows you to go to specific points in the binder without having to scroll through hundreds of pages.

5. Resize the bars by placing the icon in the dark, vertical line located between the text boxes and using a long click/tap to move ↔ in either direction. You may also adjust the sizing of the documents by adjusting the sizing preferences located on the Page Display icons found in the top toolbar or in the View tab.

6. Upon locating an analysis sheet for an agenda item that interests you, notice that you can get more information by double-clicking/tapping on any item underlined in red.

7. Return to the analysis sheet by simply re-clicking/tapping on the item in the bookmark panel.

OVERVIEW OF FISH AND GAME COMMISSION BUSINESS MEETING

- This is the 145th year of continuous operation of the Fish and Game Commission (Commission) in partnership with the Department of Fish and Wildlife (Department). Our goal is the preservation of our heritage and conservation of our natural resources through informed decision making. These meetings are vital in achieving that goal. In that spirit, we provide the following information to be as effective and efficient toward that end. Welcome and please let us know if you have any questions.

- We are operating under Bagley-Keene Open Meeting Act and these proceedings are being recorded and broadcast via Cal-Span.

- In the unlikely event of an emergency, please note the location of the nearest emergency exits. Additionally, the restrooms are located _____.

- Items may be heard in any order pursuant to the determination of the Commission President.

- The amount of time for each agenda item may be adjusted based on time available and the number of speakers.

- Speaker cards need to be filled out **legibly** and turned in to the staff **before** we start the agenda item. Please make sure to list the agenda items you wish to speak to on the speaker card.

- We will be calling the names of several speakers at a time so please line up behind the speakers' podium when your name is called. If you are not in the room when your name is called you may forfeit your opportunity to speak on the item.

- When you speak, please state your name and any affiliation. Please be respectful. Disruptions from the audience will not be tolerated. Time is precious so please be concise.

- To receive meeting agendas and regulatory notices about those subjects of interest to you, please visit the Commission's website, www.fgc.ca.gov, and sign up for our electronic mailing lists.

- If you are requesting the Commission to change a regulation, we ask that you submit it to the Commission via email to fgc@fgc.ca.gov, with the words "Request for Change" noted in the subject line. All requests must include the specific change you'd like to see and why you think it is necessary. (*Otherwise, we require that you make the request on a form proscribed the Commission*.)

- **Warning**! The use of a laser pointer by someone other than a speaker doing a presentation may result in arrest.

INTRODUCTIONS FOR FISH AND GAME COMMISSION BUSINESS MEETINGS

FISH AND GAME COMMISSIONERS

Jack Baylis	President (Los Angeles)
Jim Kellogg	Vice-President (Discovery Bay)
Richard Rogers	Member (Santa Barbara)
Michael Sutton	President (Monterey)
Jacque Hostler-Carmesin	Member (McKinleyville)

COMMISSION STAFF

Sonke Mastrup	Executive Director
Susan Ashcraft	Marine Advisor
Melissa Miller-Henson	Program Manager
Mary Brittain	Administrative Assistant
Caren Woodson	Analyst

OFFICE OF THE ATTORNEY GENERAL

Chris Ames	Senior Assistant Attorney General

DEPARTMENT OF FISH AND WILDLIFE- *Directorate*

Chuck Bonham	Director
Dan Yparraguirre	Deputy Director, Wildlife and Fisheries Division
David Bess	Chief, Law Enforcement Division
Clark Blanchard	Assistant Deputy Director, Education and Outreach

I would also like to acknowledge special guests who are present:
(i.e., elected officials, tribal chairpersons, other special guests)

_____

_____

_____

_____

PERPETUAL TIMETABLE FOR CALIFORNIA FISH AND GAME COMMISSION ANTICIPATED REGULATORY ACTIONS

Note: Dates shown reflect the actual date intended for the subject regulatory action. Please check commission and committee meeting agendas to confirm dates and actions.

Updated: 05/29/15

PROPOSED CHANGES ARE SHOWN IN BLUE

QTRLY PUB	DFW RU ANALYST	FGC ANALYST	LEAD	REGULATORY CHANGE CATEGORY	ACTION DATE, TYPE AND LOCATION	2015 MAY 6 WRC LOS ANGELES	2015 JUN 9 TRIBAL MAMMOTH LAKES	2015 JUN 10	2015 JUN 11 FGC ACTION MAMMOTH LAKES	2015 JUL 8 MRC NORTH COAST	2015 AUG 4	2015 AUG 5 FGC ACTION FORTUNA	2015 SEP 9 WRC FRESNO	2015 OCT 6 TRIBAL LOS ANGELES	2015 OCT 7	2015 OCT 8 FGC ACTION LOS ANGELES	2015 NOV 4 MRC VENTURA	2015 DEC 9	2015 DEC 10 FGC ACTION SAN DIEGO	2016 JAN TBD WRC TBD	2016 FEB TBD	2016 FEB TBD FGC ACTION	2016 MAR TBD MRC TBD	2016 MAR TBD TELECONFERENCE	2016 APR TBD	2016 APR TBD FGC ACTION TBD	2016 APR TBD TELECONFERENCE
	MR	CW	WLB	BOBCAT PROTECTION MANDATE	478				D			A															
	MR	CW	WLB	UPLAND (RESIDENT) GAME BIRD	300, 708.18				D			A	V							R						N	
	MR	JS	WLB	WATERFOWL	502				D			A	V							R						N	
*	SB	SF	MR	COMMERCIAL MARKET SQUID ~~LIGHTS~~/LOGBOOK	149			N							A												
*	MR	SF	MR	COMMERCIAL HAGFISH - 40 GAL BARRELS	180.6						N				D/A												
*	MR	ST	MR	COMMERCIAL HERRING	163, 164						N				D/A												
	SB	**ST**	**MR**	**SPORT DUNGENESS CRAB/SPORT CRAB TRAP**	29.85						**N**				**D**			**A**									
*	**SB**	**ST**	**MR**	**SPINY LOBSTER, SPORT AND COMMERCIAL**	29.80, 29.90, 121-122						N							**D/A**									
*	SB	SF	MR	MARINE PROTECTED AREAS	632		V				N				D			A									
	SB	SF	MR	GROUNDFISH FEDERAL COMPLIANCE	27.25 - 28.58						N				D			A									
	SB	JS	FB	SPORT FISH 2016	1.45 et al.	R						N				A			A	V							
	MR	**JS**	**FB**	**BIG GAME TAG QUOTAS**	360, 361, 362, 363, 364							**N**				**A**			**A**								
*	**MR**	**JS**	**FB**	**TRANSGENIC FISH**	**1.92, 671**							**N**				**A**											
	SB	JS	WLB	DFW LANDS VISITOR PASS	550, 550.5, 551, 630, 703	R						N				D			A								
*	MR	CW	MR	TRAWL LOGBOOKS	190										N			A									
*	**MR**	**JS**	**WLB**	**FALCONRY CLEAN-UP**	670											**N**			**D**			**A**					
		SF	**FGC**	**COMMISSION PROCEDURES**	TBD											**N**			**D**			**A**					
	SB	SF	MR	OCEAN SALMON SPORT FISHING (PHASE I)	1.73, 27.75, 27.80(c)													N			D			A			
	SB	SF	MR	OCEAN SALMON SPORT FISHING (PHASE II)	27.80																D						A
	SB	SF	FB	KLAMATH RIVER SPORT FISHING	7.50(b)(91.1)	V							R					N			D						A
	MR	JS	FB	CENTRAL VALLEY SALMON	7.50(b)(5)(68) & (156.5)														N			D					A
	MR	JS	WLB	MAMMAL 2015-2016	360,361,362,363,364	V							R						N			D				A	
*			MR	KELP FEES, RATE AND DEPOSITS **[2016]**	165, 165.5, 705												V										
*			MR	COMMERCIAL SEA CUCUMBER **[2016]**	128																						
*			MR	COMMERCIAL SEA URCHIN **[TBD]**	120.7																						
			OGC	AZA/ZAA **[TBD]**	671.1																						

ADDITIONAL PROPOSED EMERGENCY REGULATORY ACTIONS (SCHEDULED AS REQUIRED)

	SB	**JS**	**FB**	**MERCED RIVER**	**7.50(b)(188)**				**E**																		
	SB	**JS**	**FB**	**MEASURES FOR FISHERIES AT RISK**	**8.01**				**E**																		

MRC = MARINE RESOURCE COMMITTEE, TC = TRIBAL COMMITTEE, WRC = WILDLIFE RESOURCE COMMITTEE,

E = EMERGENCY, N = NOTICE HEARING, D = DISCUSSION HEARING, A = ADOPTION HEARING, V = VETTING, R = COMMITTEE RECOMMENDATION

Commissioners
Jack Baylis, President
Los Angeles
Jim Kellogg, Vice President
Discovery Bay
Richard Rogers, Member
Santa Barbara
Michael Sutton, Member
Monterey
Jacque Hostler-Carmesin, Member
McKinleyville

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Wildlife Heritage and Conservation
Since 1870

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
(916) 653-5040 Fax
www.fgc.ca.gov

MEETING AGENDA
June 10-11, 2015

Mountainside Conference Center
1 Minaret Road, Mammoth Lakes

The meeting will be live streamed at www.cal-span.org

NOTE: See important information about Commission deadlines and procedures at the end of the agenda.

DAY 1 – JUNE 10, 2015, 9:00 A.M

1. Public Forum
   Any member of the public may address the Commission regarding the implementation of its policies or any other matter within the jurisdiction of the Commission. The issue to be discussed should not be related to any item on the current agenda. As a general rule, action cannot be taken on issues not listed on the agenda; at the discretion of the Commission, staff may be requested to follow up on such items. Submitting written comments is encouraged to ensure that all comments will be included in the record before the Commission. Please be prepared to summarize your comments in the time allocated by the presiding commissioner.

2. Tribal Committee

   (A) Meeting summary
      I. Receive recommendations
   (B) Discuss and approve new topics

3. Adopt the Commission's tribal consultation policy

4. Marine Resources Committee

   (A) Work plan development
      I. Update on current work plan and timeline
      II. Discuss and approve new topics

5. Adoption of revised proposed regulations for petitioning the Commission to change regulations
   (Add Section 662, Title 14)

6. Request for authorization to publish notice of intent to amend commercial market squid logbooks
(Section 149 and Appendix A, Title 14, CCR)

7. Spiny Lobster Fishery Management Plan and regulations

   (A) California Ocean Science Trust peer review
   (B) Discussion and direction for implementing regulations

CONSENT ITEMS

8. Receive Santa Barbara Mariculture's request to renew state water bottom lease M-653-02 for aquaculture

9. Receive Santa Barbara Mariculture's application for new state water bottom lease for aquaculture adjacent to existing lease M-653-02

10. Receive White Seabass Fishery Management Plan annual review
(Pursuant to Section 5.9, White Seabass Fishery Management Plan)

11. Permanently revoke the commercial fishing license (L84668) and lobster operator permit (LOT909) for Mr. Troy Tecklenburg, Huntington Beach

12. Announce results from Executive Session

13. Items of interest from previous meetings

   (A) Action on petitions for regulatory change received at the April meeting and pending items from previous meetings (the summary of petitions will be posted at fgc.ca.gov/meetings/2015 about June 4, 2015)
   (B) Action on non-regulatory requests received at the April meeting and pending items from previous meetings (the summary of requests will be posted at fgc.ca.gov/meetings/2015 about June 4, 2015)
   (C) Streamlining routine regulatory changes
   (D) Public draft of the California State Wildlife Action Plan – 2015 Update
   (E) Other

14. Department informational items

   (A) Director's report
   (B) Wildlife and Fisheries Division, and Ecosystem Conservation Division
   (C) Law Enforcement Division
   (D) Marine Region
   (E) Other

15. Other items

   (A) Staff report
   (B) Legislative update and possible action
   (C) Federal agencies report

16. Discussion and action on future meeting items

    (A) Town hall meeting – August 3
    (B) Next meeting – August 4-5 in Fortuna
    (C) Possible field trip for August meeting
    (D) Perpetual timetable for regulatory action updates
    (E) Meeting schedule and locations for 2016
    (F) New business

DAY 2 – JUNE 11, 2015, 8:00 A.M

17. Public Forum
    Any member of the public may address the Commission regarding the implementation of its policies or any other matter within the jurisdiction of the Commission. The issue to be discussed should not be related to any item on the current agenda. As a general rule, action cannot be taken on issues not listed on the agenda; at the discretion of the Commission, staff may be requested to follow up on such items. Submitting written comments is encouraged to ensure that all comments will be included in the record before the Commission. Please be prepared to summarize your comments in the time allocated by the presiding commissioner.

18. Wildlife Resources Committee

    (A) Meeting summary
        I. Receive recommendations
    (B) Work plan development
        I. Update on current work plan and timeline
        II. Discuss and approve new topics

19. Inland fisheries at risk due to drought

    (A) Adoption of emergency regulation to address inland fisheries at risk due to drought conditions:
        I. Add Section 8.01, Title 14, CCR, to create a process for temporarily closing rivers to fishing; ***or***
        II. Amend Subsection 7.50(b)(118), Title 14, CCR, to close 5.5 miles of the Merced River to fishing
    (B) Discuss the long-term approach to addressing inland fisheries at risk under varied water quality and quantity conditions

20. Adopt Commission's native plant policy

21. Approve Department's Duck Stamp proposals for Fiscal Year 2015-2016

22. Discussion of proposed changes to upland game bird regulations (Sections 300 and 708.18, Title 14, CCR)

23. Discussion of proposed changes to waterfowl regulations (Section 502, Title 14, CCR)

CONSENT ITEMS

24. Receive the Department's status review report on the petition to list Pacific fisher (*Martes pennanti*) as a threatened or endangered species (Pursuant to Section 2074.6, Fish and Game Code)

25. Receive and approve initial Private Lands Wildlife Habitat Enhancement and Management Area (PLM) plans and 2015-2020 license for: (Pursuant to Section 601, Title 14, CCR)

    (A) Big Lagoon PLM (Humboldt County)
    (B) D-Rafter L Ranch, LLC (San Luis Obispo County)

26. Receive and approve annual reports and 2015-2016 Private Lands Wildlife Habitat Enhancement and Management Area plans for: (Pursuant to Section 601, Title 14, CCR)

    (A) 3D Ranch (Tehama County)
    (B) Ash Valley Ranch (Lassen County)
    (C) Avenales Ranch (San Luis Obispo County)
    (D) Big Morongo Springs Ranch (San Bernardino County)
    (E) Black Ranch (Shasta County)
    (F) Buckeye Ranch (Solano County)
    (G) Carrizo Ranch (San Luis Obispo County)
    (H) Chimney Rock Ranch (San Luis Obispo County)
    (I) Connolly and Corral Hollow Ranch (San Joaquin County)
    (J) Coon Creek Ranch (Santa Clara County)
    (K) Corning Land Cattle Co. (Tehama County)
    (L) Cottrell Ranch (Humboldt County)
    (M) Dixie Valley Ranch (Lassen County)
    (N) El Rancho Rio Frio (Tehama County)
    (O) Five Dot Ranch-Avila (Lassen County)
    (P) Four Pines Ranch (Mendocino County)
    (Q) Hearst Ranch (San Luis Obispo County)
    (R) Hunter Ranch (Humboldt County)
    (S) Indian Valley Cattle Company (Monterey County)
    (T) Jerusalem Creek Ranch (Shasta County)
    (U) Morisoli Ranch (Monterey and San Benito counties)
    (V) Pepperwood Springs Ranch (Humboldt County)
    (W) Rancho La Cuesta (San Benito County)
    (X) Redwood House Ranch (Humboldt County
    (Y) Schneider Ranch (Mendocino County)
    (Z) SL Ranch (Modoc County)
    (AA) Smith River PLM (Humboldt County)
    (BB) Stover Ranch (Humboldt County)
    (CC) Tejon Ranch (Kern and Los Angeles counties)
    (DD) Temlor Ranch (San Luis Obispo and Kern counties)
    (EE) Travis Ranch (Trinity County)
    (FF) Trinchero Ranch (San Benito County)
    (GG) Triple B Ranch (Shasta County)
    (HH) Wiggins Ranch (Humboldt County)

(II) Work Ranch (Monterey County)

27. Receive and approve 5-year Private Lands Wildlife Habitat Enhancement and Management Area plans and 2015-2020 licenses for:
(Pursuant to Section 601, Title 14, CCR)

(A) Big Bluff Ranch (Tehama County)
(B) Burrows Ranch (Tehama County)
(C) Carnaza Ranch (San Luis Obispo County)
(D) Clark and White Ranches (San Luis Obispo County)
(E) Five Dot Ranch - Horse Lake (Lassen County)
(F) Five Dot Ranch - Tunnel Springs (Lassen County)
(G) Five Dot Ranch - Willow Creek (Lassen County)
(H) JS Ranch (Shasta County)
(I) Llano Seco Rancho (Butte County)
(J) Mendiboure Ranch (Lassen County)
(K) Roberts Ranch (Modoc County)
(L) Stewart Ranch (Trinity County)

28. Consideration of petition, Department's report, and comments received on whether listing the tricolored blackbird (*Agelaius tricolor*) as a threatened or endangered species may be warranted
(Pursuant to Fish and Game Code Section 2074.2).
Note: If the Commission determines listing may be warranted, a one-year status review will commence before the final decision on listing is made.

29. Discussion of proposed changes to bobcat trapping regulations
(Pursuant to Section 4255, Fish and Game Code)

EXECUTIVE SESSION

(Not Open to Public)

Pursuant to the authority of Government Code Section 11126(a)(1) and (e)(1), and Section 309 of the Fish and Game Code, the Commission will meet in closed Executive Session. The purpose of this Executive Session is to consider:

(A) Pending litigation to which the Commission is a Party

I. Big Creek Lumber Company and Central Coast Forest Assoc. v. California Fish and Game Commission (Coho listing, south of San Francisco)

II. James Bunn and John Gibbs v. California Fish and Game Commission (squid permits)

III. Center for Biological Diversity and Earth Island Institute v. California Fish and Game Commission (black-backed woodpecker)

IV. Dennis Sturgell v. California Fish and Game Commission, California Department of Fish and Wildlife, and Office of Administrative Hearings (revocation of Dungeness crab vessel permit No. CT0544-T1)

(B) Possible litigation involving the Commission

(C) Staff performance and compensation

(D) Receipt of hearing officer recommendations on license and permit items

I. Ms. Kele Young(er) – Appeal of Denial of the Application to Renew Restricted Species Permit

FISH AND GAME COMMISSION
2015 MEETING SCHEDULE
www.fgc.ca.gov

MEETING DATE	COMMISSION MEETING	COMMITTEE MEETING
July 8		**Marine Resources** Trinidad Town Hall 409 Trinity Street Trinidad, CA 95570
August 4-5	River Lodge Conference Center 1800 Riverwalk Drive Fortuna, CA 95540	
September 9		**Wildlife Resources** Department of Industrial Relations 2550 Mariposa Mall, Room 1036 Fresno, CA 93721
October 6		**Tribal Committee** Embassy Suites – LAX North 9801 Airport Boulevard Los Angeles, CA 90045
October 7-8	Embassy Suites – LAX North 9801 Airport Boulevard Los Angeles, CA 90045	
November 4		**Marine Resources** Four Points by Sheraton Ventura Harbor Resort 1050 Schooner Drive Ventura, CA 93001
December 9-10	Town and Country Resort & Convention Center 500 Hotel Circle North San Diego, CA 92108	

OTHER MEETINGS OF INTEREST

Pacific Fishery Management Council

- June 12-17, Spokane, WA
- September 11-16, Sacramento, CA
- November 14-19, Garden Grove, CA

Wildlife Conservation Board

- September 3, Sacramento, CA
- November 19, Sacramento, CA

Western Association of Fish and Wildlife Agencies

- July 16-22, Reno, NV

Pacific Flyway Council

- July 24, Reno, NV

IMPORTANT COMMISSION MEETING PROCEDURES INFORMATION

WELCOME TO A MEETING OF THE CALIFORNIA FISH AND GAME COMMISSION

This is the 145th year of operation of the Commission in partnership with the California Department of Fish and Wildlife. Our goal is the preservation of our heritage and conservation of our natural resources through informed decision making; Commission meetings are vital in achieving that goal. In that spirit, we provide the following information to be as effective and efficient toward that end. Welcome and please let us know if you have any questions.

PERSONS WITH DISABILITIES

Persons with disabilities needing reasonable accommodation to participate in public meetings or other Commission activities are invited to contact the Reasonable Accommodation Coordinator at (916) 651-1214. Requests for facility and/or meeting accessibility should be received at least 10 working days prior to the meeting to ensure the request can be accommodated.

SUBMITTING WRITTEN MATERIALS

As of July 1, 2015, the Commission will no longer accept comments or requests for change via facsimile. Please submit written material by email or US Mail.

The public is encouraged to comment on any agenda item. Submit written comments by one of the following methods: **E-mail to fgc@fgc.ca.gov; fax to (916) 653-5040; delivery to Fish and Game Commission, 1416 Ninth Street, Room 1320, Sacramento, CA 95814; or hand-deliver to a Commission meeting.**

Written comments received at the Commission office by **5:00 p.m. on May 28** will be made available to Commissioners prior to the meeting. Comments received by **12 noon on June 5** will be marked late and made available to Commissioners at the meeting. Otherwise, 12 copies of written comments must be brought to the meeting. All materials provided to the Commission may be made available to the general public.

PETITIONS FOR REGULATORY CHANGE AND NON-REGULATORY REQUESTS

All petitions for regulatory change and non-regulatory requests will follow a two-meeting cycle to ensure proper review and thorough consideration of each item. All requests submitted by **12 noon on June 5** (or heard during public forum at the meeting) will be scheduled for receipt at this meeting, and scheduled for consideration at the next business meeting. Beginning October 1, 2015, all petitions for regulatory change must be submitted in writing using a form that will be made available on the Commission's website; details about this new requirement and the form adopted by the Commission are available at http://fgc.ca.gov/regulations/2014/index.aspx#662.

VISUAL PRESENTATIONS/MATERIALS

All visual presentations must be pre-approved by the Executive Director. Visual presentations must be provided by email or delivered to the Commission office on a USB flash drive by **12 noon on June 5**. All electronic formats must be Windows PC compatible. A data projector, laptop and presentation mouse will be available for use at the meeting.

CONSENT CALENDAR
A summary of all items will be available for review at the meeting. Any item may be removed from the consent calendar by the Commission, or upon the request of the Department or member of the public who wishes to speak to that item.

LASER POINTERS may only be used by a speaker during a presentation; use at any other time may result in arrest.

SPEAKING AT THE MEETING
To speak on an agenda item, please complete a “Speaker Card" and give it to the designated staff member before the agenda item is announced. Cards will be available near the entrance of the meeting room. Only one speaker card is necessary for speaking to multiple items.

Agenda items may be heard in any order and on either day pursuant to the discretion of the presiding commissioner.

1. Speakers will be called in groups; please line up when your name is called.
2. When addressing the Commission, give your name and the name of any organization you represent, and provide your comments on the item under consideration.
3. Each speaker has three minutes to address the Commission; however, time may be adjusted at the discretion of the presiding commissioner. If there are several speakers with the same concerns, please appoint a spokesperson and avoid repetitive testimony.
4. Speakers may cede their time to an individual spokesperson, but only under the following conditions:
    a. Individuals ceding time forfeit their right to speak to the agenda item; and
    b. The minimum number of individuals required to cede time to a spokesperson and the amount of time allocated are *arranged in advance* with the presiding commissioner.
5. If you are presenting handouts/written material to the Commission at the meeting, please provide 12 copies to the designated staff member just prior to speaking.

STAFF SUMMARY FOR JUNE 10-11, 2015

1. PUBLIC FORUM

Today's Item **Information** ☒ **Action** ☐

Receipt of public comments and requests for regulatory and non-regulatory actions.

Summary of Previous/Future Actions

- **Today's receipt of requests and comments** **Jun 10-11, 2015; Mammoth Lakes**
- Direction to grant, deny or refer requests Aug 4-5, 2015; Fortuna

Background

FGC generally receives three types of correspondence: Requests for regulatory action, requests for non-regulatory action, and informational only. The Administrative Procedure Act (APA) requires action on regulatory requests to be either denied or granted and notice made of that determination (last year we used the terms "accept" or "reject"; for 2015 we are using the terminology directly from APA). At the end of public forum a motion may be made to provide direction to staff on any items for which FGC wishes to receive additional information or take immediate action. Otherwise, FGC will determine the fate of the regulatory and non-regulatory requests at the next commission meeting.

Significant Public Comments

1. See regulatory requests in Exhibit 1
2. See non-regulatory requests in Exhibit 2

Recommendation (N/A)

Exhibits

1. Table containing a summary of new petitions for regulation change received by May 28 at 5:00 p.m., the comment deadline for the meeting binder.
2. Table containing a summary of new non-regulatory requests received by May 28 at 5:00 p.m., the comment deadline for the meeting binder.

3-13. Individual, new petitions and requests that are summarized in the tables.

14-20. Informational-only items; staff will not take any action on these unless otherwise directed by FGC.

Motion/Direction (N/A)

2. TRIBAL COMMITTEE

Today's Item **Information** ☒ **Action** ☐

Receive and discuss results of the Tribal Committee (TC) meeting held June 9, 2015.

Summary of Previous/Future Actions

- TC tribal take (TT) discussion April 7, 2015; Santa Rosa
- **Today's TC TT discussion** **Jun 9, 2015; Mammoth Lakes**

Background

During FGC's rulemaking process to adopt a network of marine protected areas (MPAs), the issue of impacting traditional gathering by Native American tribes surfaced. In particular, during the north coast study region planning effort, the issue of tribal take of living marine resources was recognized as a traditional use to avoid impacting through the siting and designation of MPAs. FGC exempted take by tribes that could demonstrate traditional use of those resources in MPAs; this exemption did not apply to MPAs designated as "reserves". FGC has received several requests since then from tribes that were not afforded that exemption in other study regions (for example: Exhibits 1-6). TC was asked to explore the more recent requests and provide recommendations to FGC.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. Letter from the U.S. Bureau of Indian Affairs regarding tribal take in MPAs by Resighini Rancheria, received Aug 20, 2012
2. Letter from the Pala Tribal Historic Preservation Office regarding tribal use of marine resources, received Mar 13, 2013
3. Letter from Smith River Rancheria to California Department of Fish and Game regarding jurisdiction over coastal waters and marine resources, received Mar 21, 2012
4. Letter from the Sherwood Valley Rancheria regarding tribal use options for MPAs in the north coast study region, received Jun 27, 2011
5. Letter from Cher-Ae Heights Indian Community of the Trinidad Rancheria, regarding consultation about Reading Rock, received Aug 14, 2013
6. Letter from the Wishtoyo Foundation and Ventura Coastkeeper regarding the Chumash co-management proposal for Sequit State Marine Conservation Area, received May 5, 2009
7. TC meeting agenda, June 9, 2015

Motion/Direction (N/A)

3. TRIBAL CONSULTATION POLICY

Today's Item **Information** ☐ **Action** ☒

Consider adoption of tribal consultation policy

Summary of Previous/Future Actions

- TC discussion and drafting — April 17, 2014; Solvang
- TC discussion and drafting — June 5, 2014; Fortuna
- TC discussion and drafting — Sept. 17, 2014; Sacramento
- Receipt of draft policy — Dec. 3, 2014; Van Nuys
- Discussion hearing — Feb 11, 2015; Sacramento
- Discussion hearing — April 7, 2015; Santa Rosa
- **Today's adoption hearing — Jun 10-11, 2015; Mammoth Lakes**

Background

FGC announced the beginning of its process to implement Governor Brown's Executive Order B-10-11 to develop a Tribal Consultation Policy at its February 5, 2014, meeting. To strengthen communication and collaboration between FGC and California federally-recognized tribes and tribal communities, FGC created the Tribal Committee as one of its working committees. FGC asked the Tribal Committee to develop an effective government-to-government consultation policy to guide work between FGC and tribes on policies that affect California tribal communities.

In summary, the draft policy focuses on early communication and coordination rather than on formal consultation. Most of the issues that might warrant formal consultation would require the participation of the DFW using its formal consultation policy.

Significant Public Comments (N/A)

Recommendation

FGC staff: Adopt tribal consultation policy.

Exhibits

1. Draft Tribal Consultation Policy

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the proposed tribal consultation policy.

4. MARINE RESOURCES COMMITTEE

Today's Item **Information** ☐ **Action** ☒

Review tasks referred to the Marine Resources Committee (MRC) for discussion and evaluation, review potential agenda topics for July 8, 2015 MRC meeting in Trinidad, and consider potential new topics for MRC review.

Summary of Previous/Future Actions

- Most recent MRC meeting — Mar 4, 2015; Marina
- **Today's approval of July draft MRC topics — Jun 10-11, 2015; Mammoth Lakes**
- Next MRC meeting — Jul 8, 2015; Trinidad

Background

FGC directs committee work. This agenda item is to review topics submitted to MRC for evaluation, identify new topics to refer to MRC, and provide guidance as to the content of the next MRC agenda. Topics already referred to MRC include:

- Abalone Fishery Management Plan (FMP) development
- Fisheries bycatch workgroup
- Pier and jetty fishing review in southern California
- Herring FMP planning updates
- California's fishing communities

Two additional topics previously identified are now ready to schedule for MRC review, based on DFW readiness:

- Update *MLMA Master Plan for Fisheries*
- Update *MLPA Master Plan for Marine Protected Areas* (MPAs)

Draft agenda topics for the July 8, 2015 MRC meeting are shown in the MRC work plan in Exhibit 1, as well as proposed additions for FGC consideration today.

Significant Public Comments

1. Natural Resources Defense Council (NRDC), an MPA implementation partner, has requested to be added to the July MRC agenda, to share results of a new NRDC report titled, *Enforcement Technology Options for California* MPAs (Exhibit 2).

Recommendation

1. Staff recommends adding the following topics to the draft MRC work plan (Exhibit 1):
    - *MLMA Master Plan for Fisheries* update
    - *MLPA Master Plan for MPAs* update
    - NRDC report on MPA enforcement technology options

2. Staff also recommends that draft discussion topics for the July 2015 MRC meeting include:
    - Abalone FMP development update
    - Fisheries bycatch workgroup update
    - Pier and jetty fishing review update
    - California's fishing communities discussion
    - Three additional topics identified under staff recommendation 1

Exhibits

1. MRC 3-year work plan and draft agenda topics for July 8, 2015 MRC meeting
2. Email request from Karen Garrison, NRDC, requesting to be added to the MRC agenda, received May 28, 2015

Motion/Direction

Moved by _____and seconded by _____ that the Commission approves the July 2015 MRC draft meeting topics and the updated MRC work plan with additions recommended by staff.

5. REGULATION PETITION PROCESS AND FORM

Today's Item **Information** ☐ **Action** ☒

Adopt revised regulation petition process regulation and form FGC1.

Summary of Previous/Future Actions

- Notice hearing — Oct 8, 2014, Mt. Shasta
- Discussion hearing — Dec 3, 2014; Van Nuys
- Original adoption hearing — Feb 11-12, 2015; Sacramento
- **Today's adoption hearing — Jun 10-11, 2015; Mammoth Lakes**

Background

At its Feb 11-12 meeting in Sacramento, FGC adopted a proposed regulation and form regarding petitions for regulation change; the Office of Administrative Law (OAL) notified FGC staff that OAL would not approve FGC's regulation and form as written. FGC staff withdrew the rulemaking file from OAL on Apr 21, 2015.

The following revisions were made based on OAL's recommendation:

- Regulatory text concerning a two meeting process was removed;
- Regulatory text concerning referral to DFW or to a committee for evaluation and recommendation prior to commencement of the rulemaking was removed;
- Regulatory text concerning staff review of a petition was clarified to state that a petition may be rejected if the petition fails to contain necessary information in the **required** categories of petition form FGC1;
- Regulatory text stating "If any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted" was moved from the paragraph concerning staff rejection of the petition to the paragraph concerning FGC denial of the petition;
- Petition form FGC1 was revised to clarify which information is required and which information is optional; and
- Petition form FGC1's check box "Reject – same as petition _____" was moved from the section regarding staff action to the section regarding FGC action and changed to "Deny – same as petition _____"

The following revision was recommended by FGC staff:

- In the regulation and on Form FGC1, terminology regarding FGC action on a petition was changed from accept/reject to grant/deny to match terminology in Government Code, Section 11340.7

A 15-day notice of the revisions recommended by OAL and by FGC staff was sent to interested and affected parties on May 20, 2015.

If FGC approves the revised regulation and form, staff will re-file the rulemaking file with OAL. If FGC does not approve the revised regulation and form, staff will file a notice of decision not to proceed and the regulation will die.

Significant Public Comments (N/A)

Recommendation

FGC staff: Adopt the revised regulation as recommended by OAL and FGC staff.

Exhibits

1. ISOR with originally proposed regulation and originally proposed petition form FGC1
2. PSOR with revised proposed regulation based on public comment
3. Revised proposed regulation text based on OAL recommendation and staff recommendation
4. Revised proposed petition form FGC1 based on OAL recommendation and staff recommendation
5. Government Code Sections 11340.6 and 11340.7

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts revised proposed Section 662, Title 14, California Code of Regulations, concerning the regulation petition process and form FGC1.

6. MARKET SQUID LOGBOOKS

Today's Item **Information** ☐ **Action** ☒

Authorization to publish notice of intent to amend market squid logbooks.

Summary of Previous/Future Actions

- Original notice hearing — Apr 8-9, 2015; Santa Rosa
- **Today's notice hearing** — **Jun 10-11, 2015; Mammoth Lakes**
- Adoption hearing — Oct 7-8, 2015; Los Angeles

Background

DFW requests that FGC authorize publication of notice of its intent to consider amending market squid logbook forms located in Appendix A of Title 14, and amending existing regulations concerning said forms (Section 149, Title 14, California Code of Regulations).

Proposed changes to the market squid logbook provisions include:

- Update Market Squid Vessel Logbook (DFG 149a) and Market Squid Light/Brail Boat Logbook (DFG 149b) to bring these forms into compliance with the standards set by DFW's forms management coordinator.
- Improve instructions that explain how the logs are to be filled out.
- Improve the quality of data that are received by DFW.
- Refer to the revised forms entitled with an updated version number "Market Squid Vessel Logbook – DFW 149a (Rev. 05/01/15)", and "Market Squid Light/Brail Boat Logbook – DFW 149b (Rev. 05/01/15)."

Additionally, other non-substantive changes are proposed to the regulations of Section 149 in order to improve clarity and organization

At the Apr 8, 2015 FGC meeting, DFW presented a potential regulatory package that included the above changes as well as proposed changes to lighting requirements in subsections (f), (g), and (h) of Section 149. However, at that same meeting, DFW withdrew its request for authorization to publish notice. The proposed lighting changes have been removed from the package to allow for further scoping of current practices, which has been deemed necessary to more fully evaluate the proposed lighting modifications.

Significant Public Comments (N/A)

Recommendation

FGC staff: Authorize publication of the notice as recommended by DFW.

Committee: N/A

DFW: Authorize publication of the notice of proposed regulatory action.

Exhibits

1. DFW memo, received May 14, 2015
2. Initial statement of reasons
3. DFW presentation

Motion/Direction

Moved by _____ and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend Section 149 and Appendix A regarding commercial market squid logbooks.

7. SPINY LOBSTER FISHERY MANAGEMENT PLAN AND REGULATIONS

Today's Item **Information** ☐ **Action** ☒

Receive Spiny Lobster Fishery Management Plan (FMP) scientific review from California Ocean Science Trust (OST); receive update on FMP and rulemaking timeline; discuss draft regulations and provide direction on options for regulations to include in rulemaking.

Summary of Previous/Future Actions

- MRC vetting and recommendation — Mar 4, 2015; Marina
- Informational update — Apr 8-9, 2015; Santa Rosa
- **Today discuss/direction on regulatory options — Jun 10-11, 2015; Mammoth Lakes**
- *Receive FMP; regulations notice hearing — Aug 4-5, 2015; Fortuna
- *Adopt FMP; discussion/adoption hearing — Dec 9-10, 2015; San Diego

Background

A Spiny Lobster FMP has been under development since 2012 and is nearing completion. A preliminary public draft FMP was released in Nov 2014, and a scientific review was completed in late May 2015 by a scientific review committee convened by OST (Exhibit 1). FGC is scheduled to receive the FMP after DFW revises the draft based on scientific review findings. Today, OST will present an overview of the scientific review.

Management measures and regulations to implement the Spiny Lobster FMP were developed through DFW's Lobster Advisory Committee (LAC). LAC developed a package of consensus-based regulatory recommendations, clarified and defined through follow-up meetings between DFW and LAC commercial and recreational representatives. At its April 2015 meeting, FGC received a DFW overview of LAC and DFW recommendations (exhibits 2 and 3), and an MRC recommendation (see "Committee" recommendation below). A memo and summary overview of LAC recommendations, select recommendations that DFW does not support, and additional measures proposed by DFW is provided for discussion today (Exhibit 4).

Today, FGC is scheduled to discuss the regulatory recommendations, receive public comment, and provide direction to DFW on the scope of regulatory options to include in a notice of proposed regulatory action and initial statement of reasons for regulatory change. See FGC staff, MRC, and DFW recommendations below. Key considerations for FGC direction are:

- Confirm inclusion of LAC recommendations and additional DFW recommendations.
- Include *or do not include* as options the LAC recommendations not supported by DFW?
- Include *or do not include* any alternatives to DFW or LAC recommendations?

* <u>A note on timeline:</u> DFW is expected to present a proposed timeline revision necessary to account for project staff redirected to support Refugio oil spill response operations and to adequately address the scientific review findings in the FMP.

Significant Public Comments

1. Ace Line Hauler Fishing Products, manufacturer of mechanized hoop pullers, email to

DFW, concerned about impact of proposed pullers ban on business (Exhibit 5)

2. Package of 58 letters opposing LAC recommendation for commercial trap limits: 10 lobster or general commercial fishermen, 7 restaurant owners or fish buyers, and 41 commenters of unidentified affiliation (see Exhibit 6 for sample letters)
3. Public testimony is anticipated to reintroduce previous proposal concepts to "grandfather in" higher trap limits, although staff has not seen any new specific written proposal

Recommendation

FGC staff: Staff supports DFW recommendations to include LAC changes except for restricting recreational mechanized pullers or for 3-year phase-in commercial trap limit, and to include DFW-identified additions. However, staff recommends that FGC clarify with DFW regarding specific implementation details associated with the LAC waiver to pull another lobster operator permit holder's traps (e.g., retention of lobsters from serviced traps, and setting of waiver conditions by DFW). Staff also supports MRC recommendation to not include alternate, non-consensus options such as trap limit tiers.

Committee: MRC recommends that FGC endorse the LAC consensus recommendations and DFW additional recommendations for proposed regulation options. MRC did not recommend any alternate stakeholder proposals to the LAC recommendations.

DFW: 1) Include LAC recommendations except: do not include a) restriction on recreational use of mechanized pullers, nor b) short-term phase-in commercial trap limit provision; and 2) Include DFW's additional recommendations not addressed by LAC.

Exhibits

1. OST report on Spiny Lobster FMP scientific review, received May 28, 2015
2. LAC and DFW recommendations: commercial lobster regulations, dated Feb 20, 2015
3. LAC and DFW recommendations: recreational lobster regulations, dated Feb 20, 2015
4. DFW memo, received May 29, 2015
5. Ace Line Hauler Fishing Products email to DFW opposing recreational ban of mechanized pullers, forwarded from DFW to FGC on Apr 2, 2015
6. Sample letters opposing LAC trap limit, received May 18, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission directs staff to include all LAC recommendations for a draft lobster rulemaking, with the following modifications (check those that apply):

___ do not include LAC recommended restriction on recreational use of mechanized pullers

___ do not include LAC recommended commercial short-term phase-in trap limit

___ include DFW-identified recommendations

___ under a waiver, specify that lobsters retrieved from serviced traps may be retained

___ under a waiver, specify that DFW may prescribe waiver conditions, including whether traps must be brought back to shore or may be returned to water unbaited and wired open

8. SANTA BARBARA MARICULTURE LEASE RENEWAL (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Receive Santa Barbara Mariculture's request to renew state water bottom lease M-653-02 for aquaculture.

Summary of Previous/Future Actions

- FGC approved one year lease extension Dec 3, 2014; Van Nuys
- **Today receive request to renew lease** **Jun 9, 2015; Mammoth Lakes**

Background

FGC has the authority to lease state water bottoms to any person for aquaculture if FGC determines that such a lease is in the public interest (Section 15400, Fish and Game Code). A lessee shall have a prior right to renew the lease on terms agreed upon between FGC and the lessee (Section 15406, Fish and Game Code).

Santa Barbara Mariculture currently holds FGC-issued state water bottom lease (lease) number M-653-02, which is set to expire January 17, 2016 (Exhibit 1). Since the original lease period of 2005-2010, FGC has approved several short-term extensions (Exhibit 2). In 2013, the leaseholder, Mr. Bernard Freidman, requested to renew his lease under a reconfigured shape and position intended to be more compatible with vessel traffic patterns. The proposed new shape overlaps approximately 46 acres of the current 72 acre lease, and relocates 26 acres to an adjoining plot. At DFW's request, FGC granted Mr. Freidman a one-year extension in 2013 and again in 2014, to allow continued operations while DFW worked on resolving the complex issues associated with the lease renewal and boundary reconfiguration request.

Based on legal counsel, staff advised Mr. Freidman to divide his request into two separate action items: A "lease renewal" request for the portion of the current lease M-653-02 he wishes to retain (this agenda item), and an application for a "new lease" for the area proposed to be relocated adjacent to, but outside, the current lease area for M-653-02 (see Agenda Item 9). Mr. Freidman has submitted both requests for concurrent consideration (Exhibit 3). The lease renewal request is to retain approximately two-thirds of the current lease area (~46 acres) and to surrender the seaward-most third of the lease (~26 acres). Mr. Freidman proposes to relocate the 26 acres to a "new lease" area adjacent to Lease M-653-02; the new lease application is received under Agenda Item 9 (see map in Exhibit 4). As the lease renewal and new lease application are inextricably connected to each other, both items will be scheduled concurrently for FGC consideration.

Following receipt by FGC, DFW will review the request and provide its evaluation for FGC consideration later this year.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. Santa Barbara Mariculture aquaculture lease renewal for State Water Bottom Lease M-653-02 in Santa Barbara Channel, issued Nov 3, 2005
2. Lease history and renewal timeline for M-653-02
3. Santa Barbara Mariculture request for lease renewal and application for new lease
4. Map of current and proposed lease areas

Motion/Direction

Moved by _____ and seconded by _____that the Fish and Game Commission adopts the Consent Calendar, items 8-11.

9. SANTA BARBARA MARICULTURE REQUEST FOR NEW LEASE (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Receive Santa Barbara Mariculture's application for new state water bottom lease for aquaculture, adjacent to existing lease M-653-02.

Summary of Previous/Future Actions

- FGC approved one year lease extension Dec 3, 2014; Van Nuys
- **Today receive new lease application** **Jun 10-11, 2015; Mammoth Lakes**

Background

FGC has the authority to lease state water bottoms to any person for aquaculture if FGC determines that such a lease is in the public interest (Section 15400, Fish and Game Code). Requirements for new lease applications and their consideration by FGC are specified in Section 15403 et seq. of the Fish and Game Code.

Santa Barbara Mariculture currently holds FGC-issued state water bottom lease (lease) number M-653-02, which is set to expire January 17, 2016. As described in Agenda Item 8, the lessee, Mr. Bernard Freidman, wishes to renew the lease under a reconfigured shape anticipated to be more compatible with vessel traffic patterns. The proposed new shape overlaps with ~46 acres of the current 72 acre lease, while the seaward-most 26 acres would be relocated to an area adjacent to, but outside, the current lease area (see agenda item 8, exhibits 8.1 and 8.2).

Legal counsel has advised that surrender of the seaward portion of the existing lease and its relocation to a new adjacent area constitute separate actions, where amending the existing lease footprint would be considered under lease renewal (Agenda Item 8) and the proposed new area would be considered through an application for a "new lease". Mr. Freidman has submitted the lease renewal request and new lease application within the same letter and supporting documentation (see Agenda Item 8, Exhibit 8.3).

The new lease application must undergo DFW and California Environmental Quality Act (CEQA) review and public notice before final consideration by FGC. Staff is consulting with legal counsel concerning the process and timing for the CEQA review. As the lease renewal and new lease application are inextricably linked to each other, both items will be scheduled concurrently for FGC consideration.

Following receipt by FGC, DFW will review the application, consult with agencies of overlapping jurisdiction, and provide its evaluation and CEQA review to inform FGC consideration later this year

Significant Public Comments (N/A)

Recommendation (N/A)

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Exhibits (N/A) (see Agenda Item 8, exhibits 8.1, 8.2 and 8.3)

Motion/Direction

Moved by _____ and seconded by _____that the Fish and Game Commission adopts the Consent Calendar, items 8-11

10. WHITE SEABASS FMP ANNUAL REVIEW (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Receive DFW's White Seabass Fishery Management Plan 2013-2014 Annual Review report.

Summary of Previous/Future Actions (N/A)

Background

FGC adopted the White Seabass Fishery Management Plan (FMP) in June 2002, which requires annual monitoring and review of the commercial and recreational fisheries. The White Seabass Scientific and Constituent Advisory Panel (WSSCAP) was established to assist DFW and FGC with reviewing the fishery assessments, management proposals and plan amendments. Annual review includes fishery-dependent and fishery-independent data, if available, documented changes within the social and economic structure of industries that utilize the white seabass resource within California, information on the harvest of white seabass in Mexican waters and other relevant data. FGC adopted criteria ("points of concern") to help determine when to address resource management issues.

DFW met with WSSCAP in April 2015 to review fishery information and consider whether current management measures were providing adequate protection for the white seabass resource. WSSCAP reviewed the points of concern established in the FMP and found that none of the concerns were met. In addition, a criteria-based evaluation of the white seabass population was conducted to determine if an overfished condition exists and found that, while there has been a decrease in commercial landings in recent years, an overfished condition was not indicated.

Significant Public Comments (N/A)

Recommendation

FGC staff: Accept the DFW recommendation under a motion to adopt the consent calendar.

DFW: DFW recommends no changes to current recreational and commercial white seabass fisheries management.

Exhibits

1. DFW memo, dated May 13, 2015
2. DFW White Seabass Fishery Management Plan 2013-2014 Annual Review, dated April 2015

Motion/Direction

Moved by _____ and seconded by _____that the Commission adopts the Consent Calendar, items 8-11

11. TROY TECKLENBURG (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Permanently revoke commercial fishing license and lobster operator permit for Troy L. Tecklenburg of Huntington Beach.

Summary of Previous/Future Actions (N/A)

Background

The California Department of Fish and Wildlife has requested that FGC permanently revoke Troy L. Tecklenburg's Commercial Fishing License Number L84668 and Lobster Operator Permit Number LOT909 (Exhibit 1). DFW sent a warden to Mr. Tecklenburg's home in early April 2015 to deliver its accusation; no one answered the door. DFW then sent the accusation via certified mail to the mailing address on file; a USPS notice was left at Mr. Tecklenburg's address on April 17. California Government Code, Section 11505(c) states, in part, that "Service by registered mail shall be effective if a statute or agency rule requires the respondent to file the respondent's address with the agency and to notify the agency of any change, and if a registered letter containing the accusation…and accompanying material is mailed, addressed to the respondent at the latest address on file with the agency." Mr. Tecklenburg's response to the accusation was required within 15 days of delivery if he wished to appeal DFW's request; he did not respond.

FGC staff sent Mr. Tecklenburg a letter both certified and regular mail as a pre-meeting notification of FGC's potential action on June 10 (Exhibit 2); he contacted FGC staff by phone to indicate that he was in Canada during the time the certified mail delivery attempts of the accusation were made. However, staff has also been notified by DFW Office of the General Counsel that DFW wardens personally interacted with Mr. Tecklenburg on his boat during the same time frame (Exhibit 3).

Mr. Tecklenburg has violated the California Fish and Game Code numerous times, was convicted twice, and has a third case pending. In Sep 2014, Mr. Tecklenburg's commercial lobster privileges were temporarily suspended for failure to appear at a hearing; the suspension ended in Dec 2014 when the case concluded and Mr. Tecklenburg paid $521 in fines.

In recognizing Mr. Tecklenburg's waiver of his right to a hearing for failure to timely file a notice of defense, FGC may (1) permanently revoke his commercial fishing license and/or his lobster operator permit as requested by DFW or (2) in its discretion grant him a hearing through the Office of Administrative Hearings, and/or temporarily suspend Mr. Tecklenburg's commercial fishing license and/or lobster operator permit until the hearing process is complete. If FGC chooses to grant Mr. Tecklenburg a hearing, staff recommends this agenda item be moved to the Aug 4-5, 2015 meeting for further discussion since for the Jun 10-11 meeting it is listed as a consent item for permanent revocation.

Significant Public Comments (N/A)

Recommendation

FGC staff: Support DFW's recommendation.

Committee: N/A

DFW: Permanently revoke Troy Tecklenburg's Commercial Fishing License Number L84668 and Lobster Operator Permit Number LOT909.

Exhibits

1. DFW accusation against Mr. Troy Tecklenburg, received Apr 7, 2015
2. FGC letter to Mr. Tecklenburg, without enclosure, sent May 20, 2015
3. DFW letter to FGC, dated May 27, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the Consent Calendar, items 8-11.

OR

Moved by _____ and seconded by _____ that the Commission moves consideration of DFW's request to permanently revoke Troy L. Tecklenburg's commercial fishing license and lobster operator permit to the August 4-5, 2015 meeting for further consideration.

12. EXECUTIVE SESSION

Today's Item **Information** ☐ **Action** ☒

(A) Pending litigation to which FGC is a party – See agenda for complete list of litigation.

(B) Possible litigation involving FGC – None to report through May 29.

(C) Staff performance and compensation: Update on staffing.

(D) Receipt of hearing officer recommendations on license and permit items – Review of and action on Office of Administrative Hearings' (OAH) administrative law judge's proposed decision regarding Ms. Kele Young (er)'s appeal of DFW's denial of the application to renew restricted species permit. (Exhibit D1)

Summary of Previous/Future Actions (N/A)

Background

This is a standing agenda item for FGC to announce results from its executive session.

Significant Public Comments

(D) Kele Young (er) requests to vacate FGC's June 10-11, 2015 agenda item to render a decision on this matter until the first available *southern* California commission meeting so that she may be present to address the commissioners on this matter. (Exhibit D2). The California Department of Fish and Wildlife (DFW) responded to the objection by asking FGC to adopt the proposed decision in its entirety and objecting to the request to vacate (Exhibit D3); DFW identifies a number of reasons for its positions, including the fact that Ms. Young (er)'s facility has been unpermitted since Nov 2013 and uninspected since Dec 2011, and she has not paid any required fees since 2012.

Recommendation

(D) ***FGC staff:*** Support the DFW recommendation. If Ms. Young (er) appears to testify, staff recommends taking her testimony before breaking for executive session.

DFW: Adopt the proposed decision from the Office of Administrative Hearings.

Exhibits

D1. Proposed decision for Kele Young (er) (exhibits will be available to view during executive session)

D2. Kele Young (er) objections to proposed decision, received May 28, 2015

D3. California Department of Fish and Wildlife response to Kele Young (er)'s May 28, 2015 objections/request to vacate, received June 2, 2015

Motion/Direction (to be used in executive session)

Moved by _____ and seconded by _____ that the Commission adopts / amends / rejects the Office of Administrative Hearings' administrative law judge's proposed decision for Kele Young (er).

13. ITEMS OF INTEREST FROM PREVIOUS MEETINGS

Today's Item **Information** ☒ **Action** ☒

This is a standing agenda item for FGC to provide direction on regulatory petitions and non-regulatory requests from the public, as well as other items of interest from previous meetings. For this meeting:

(A) Action on petitions for regulatory change received at the April meeting and pending items from previous meetings.

(B) Action on non-regulatory requests received at the April meeting and pending items from previous meetings.

(C) Streamlining routine regulatory changes

(D) Public draft of *California State Wildlife Action Plan – 2015 Update*

(E) Other

Summary of Previous/Future Actions

(A-B) FGC received the requests in exhibits A1 and B1 in three ways: (1) Requests received at the office through March 26 were published as tables in the April meeting binder, (2) requests received as late handouts were delivered at the April meeting, and (3) requests that were received during public forum at the April meeting.

(C) At its April 2015 meeting, the California Fish and Game Commission (Commission) directed staff to bring to the June 2015 meeting an initial proposal for streamlining some of the routine rulemakings to create more efficient processes.

(D) N/A

Background

(A-B) FGC provides guidance and direction to staff regarding requests from the public received by mail, fax, and email and during public forum at the previous FGC meeting. The public request logs listed as exhibits capture the regulatory and non-regulatory requests received through the last meeting that require FGC guidance.

(C) See Exhibit C.1 for background.

(D) FGC has received updates during development of the California State Wildlife Action Plan (SWAP) – 2015 Update draft. The public comment period is currently open (see exhibits D1 and D2).

Significant Public Comments (N/A)

(D) A commenter urges FGC to ask DFW to amend language in the public draft to reflect language in a 2013 document where only *illegal* hunting, fishing and harvesting in the Bay Delta-Central Coast Region was identified as a pressure, rather than hunting, fishing and harvesting in general (Exhibit D.3).

Recommendation

(A-B) Adopt staff recommendations for the regulatory and non-regulatory requests with either (1) deny the request, (2) grant the request, or (3) refer the request to MRC,

WRC, TC, DFW staff, or FGC staff for further evaluation or information gathering. The exhibits contain staff recommendations for each request.

(C) See Exhibit C.1 for staff recommendation.

(D) N/A

Exhibits

A1. Regulatory requests received in preparation for or presented at the Apr 2015 meeting

B1. Non-regulatory requests received in preparation for or presented at the Apr 2015 meeting

C1. *Staff Report on Streamlining Routine Regulatory Changes*

D1. DFW news release on SWAP 2015 Update draft

D2. SWAP 2015 Update – Executive summary

D3. Email from Scott McMorrow regarding language in the public draft, SWAP – 2015 Update, received May 26, 2015

Motion/Direction

(A-B) Moved by _____ and seconded by _____ that the commission adopts the staff recommendations for actions on April 2015 regulatory and non-regulatory requests and for streamlining routine regulatory changes.

OR

Moved by _____ and seconded by _____ that the Commission adopts the staff recommendations for streamlining routine regulatory changes, and actions on April 2015 regulatory and non-regulatory requests, except for item(s) _____ for which the action is _____.

14. DEPARTMENT INFORMATIONAL ITEMS

Today's Item **Information** ☒ **Action** ☐

This is a standing agenda item to receive and discuss informational updates from DFW:

(A) Director's Report
(B) Wildlife and Fisheries Division, and Ecosystem Conservation Division
(C) Law Enforcement Division
(D) Marine Region
(E) Other

Summary of Previous/Future Actions (N/A)

Background

With a coalition of oil spill response organizations, DFW's Office of Spill Prevention and Response (OSPR) has been actively managing cleanup work at the Refugio Oil Spill in Santa Barbara; OSPR provides regular updates on the status of efforts on its website (Exhibit A.1).

Elkhorn Slough is owned by DFW and operated in partnership with the National Oceanic and Atmospheric Administration and the local non-profit Elkhorn Slough Foundation. The Elkhorn Slough Tidal Marsh Restoration Project proposes to restore 147 acres of tidal salt marsh, ecotone, and upland native grasslands (Exhibit D.1). While some of the project area occurs along the edges of the Elkhorn Slough State Marine Reserve, the footprint of the reserve is not expected to change. A mitigated negative declaration environmental document is expected to be released early this summer.

Six DFW wildlife officers have received the State Medal of Valor, the state's highest honor, while several other wildlife officers and DFW communications staff have been recognized for their work (see exhibits E.1-E.4).

DFW has undertaken a number of activities that are potentially of interest to FGC members (see exhibits E.5-E.9).

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

A1. Refugio oil spill: Unified Command update (May 28, 2015), map of shoreline oiling (May 27, 2015) and DFW declaration of fisheries closure (May 21, 2015)
D1. CDFW memo regarding restoration of Minhoto Marsh within the Elkhorn Slough State Marine Reserve, received May 29, 2015
E1. *Six Wildlife Officers Receive Medal of Valor, California's Highest Honor*, April 23, 2015
E2. *CDFW Tales Three Golds at Excellence in Communications Competition*, May 21, 2015

E3. *California Rifle and Pistol Association Honors CDFW Assistant Chief Roy Griffith as Wildlife Officer of the Year*, May 22, 2015

E4. *Shikar-Safari Club International Honors Lt. Sheree Christensen as Wildlife Officer of the Year*, May 26, 2015

E5. *CDFW Awards $21 Million in Grants for Greenhouse Gas Reduction Projects*, Apr 30, 2015

E6. *Diverse Coalition Negotiating Historic Venture to Reintroduce Salmon to Sierra*, May 7, 2015

E7. *Poachers Take Advantage of Drought Conditions to Target Juvenile Salmon*, May 13, 2015

E8. *CDFW and Partners Investigate Decline in Pheasant Population*, May 12, 2015

E9. *California Fish and Game Scientific Journal Completes 100th Anniversary Series*, May 22, 2015

Motion/Direction (N/A)

STAFF SUMMARY FOR JUNE 10-11, 2015

15A. OTHER ITEMS – STAFF REPORT

Today's Item **Information** ☒ **Action** ☐

Receive an update on staffing and staff's time allocation for May 2015.

Summary of Previous/Future Actions (N/A)

Background

In an effort to help keep the Commission current on its staffing and where staff is expending its time, staff has developed a report that shows the allocation of time in general categories for the previous month, as well as highlights some of the specific activities for the previous and current months (see Exhibit A1).

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

A1. *Staff Report on Staff Time Allocation – May 2015*

Motion/Direction

Staff would appreciate feedback on the usefulness of this information and the format/content.

15B. OTHER ITEMS – LEGISLATIVE UPDATE

Today's Item **Information** ☒ **Action** ☒

Review and discuss legislation of interest identified by FGC and DFW staff (exhibits B1 and B2), and provide staff direction.

Summary of Previous/Future Actions

- Brief update — Apr 8-9, 2015; Santa Rosa
- **Today's update and possible action** — **Jun 10-11, 2015; Mammoth Lakes**

Background

FGC staff has prepared a list of legislative bills that may be of interest to FGC, which includes a brief synopsis and current bill status. Items highlighted in yellow indicate legislation of particular interest or that may impact FGC's resources and workload.

This is the best opportunity for FGC to provide direction to staff concerning any proposed legislation. At any meeting FGC may direct staff to provide information or share concerns with bill authors. FGC members also have the option to take positions on bills at the same meeting an update is provided.

Updates on Pending Legislation

AB 290 (Bigelow) – This is a 2-year bill. Would re-define "pigs", prohibit release into uncontrolled areas, eliminate DFW-required management plan, require up to 40% of funds from sale of wild pig validations be used to remedy damage by pigs, replaces wild pig tag with a validation on the hunting license which permits unlimited take and possession, set pig validation at $15 for residents and $30 for nonresidents, and prohibit take at night unless DFW is notified by 3:00 p.m. prior to the planned take.

AB 665 (Frazier) – Confirms that the state fully occupies the field of authority for the taking and possession of fish and game. *The bill was amended to alleviate concerns regarding the prohibition of cities and counties from enacting laws that affect incidental take for the purpose of protecting health and/or safety.* The bill clarifies that unless otherwise authorized by the Fish and Game Code or other state or federal law, FGC and DFW are the only entities that may adopt or promulgate regulations regarding the taking or possession of fish and game on any lands or waters within the state.

AB 729 (Atkins) – Per Commissioner Sutton's request, staff met with Speaker Atkins' office regarding AB 729 (San Diego Unified Port District, territory held in trust). Legislative staff indicated they are not seeking to remove FGC's aquaculture lease authority. This is a 2-year bill, to be amended in the coming weeks. FGC staff agreed to keep in touch with the office and monitor the legislation.

AB 1201 (Salas) – Would require DFW, by June 30, 2016, to develop and initiate a science-based approach that addresses predation by nonnative species upon species of fish listed

pursuant to the act that reside all or a portion of their lives in the Sacramento-San Joaquin Delta.

SB 457 (Nielsen) – Would amend the Bobcat Protection Act to permit that the boundary features may also include, but are not limited to, landmarks. *The bill was amended to include roads instead of major roads and would provide that landmarks and geographic positions established by navigation and surveying methods may be used to delineate the boundaries of an area described above in which bobcat trapping is prohibited.*

Significant Public Comments

- California Law Review Commission (CLRC) is studying the Fish and Game Code to propose a complete revision. Phase 1 revisions are included in AB-1527, legislation currently pending before the legislature. CLRC is soliciting public comment on its Phase 2 recommendations to enact new provisions that authorize take or possession in specific circumstances and to abandon the FGC rulemaking procedures outlined in Article 1 in favor of APA procedures (Exhibit B3). Comments are due Sept 1, 2015.
- Siskiyou Houndsmen and Sportsmen letter in support of SB 457 (Exhibit B4).

Recommendation

FGC Staff:

AB 290 (Bigelow): Per WRC direction, direct staff to work with DFW, the state legislature, and stakeholders to facilitate an acceptable and pragmatic solution to the wild pig issues discussed at the May 2015 Wildlife Resources Committee meeting.

AB 665 (Frazier): Consider supporting this legislation because it directly addresses the pier and jetty fishing issue currently referred to the Marine Resources Committee.

WRC: WRC directed staff to work with the Department, state legislature, and stakeholders to facilitate an acceptable and pragmatic solution to the wild pig issues presented and discussed at the May 6, 2015, meeting in Los Angeles.

Exhibits

B1. FGC Legislative Tracking Log, updated May 28, 2015
B2. DFW Legislative Update, as of May 27, 2015
B3. Memorandum 2015-20 from CLRC, received May 26, 2015
B4. Letter from Siskiyou Houndsmen and Sportsmen, received Apr 28, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission directs staff to work with the state legislature to provide information and/or share concerns about AB _____ and/or SB _____ that would significantly impact Commission authority or resources.

15C. OTHER ITEMS – FEDERAL AGENCIES REPORT

Today's Item **Information** ☒ **Action** ☐

This is a standing agenda item to receive reports on any recent federal agency activities of interest not otherwise addressed under other agenda items.

Summary of Previous/Future Actions (N/A)

Background

NOAA: Charlotte Ambrose provides an update on a NOAA initiative for eight listed species, with five in California's freshwater and marine environments. In Exhibit C1 she provides a summary of the recovery actions for salmon and on June 10 will highlight the species in the spotlight, criteria used to identify these species, some of the actions that have advanced this cause (such as changes to fishing regulations FGC made last year for central California coast Coho) and other actions NOAA intends to pursue with co-managers and stakeholders. Exhibit C2 is a news release regarding all-time lows for overfishing and overfished species in U.S. fisheries.

USFWS: The U.S. Fish and Wildlife Service and National Marine Fisheries Service announced an additional suite of actions they will take to improve the effectiveness of the federal Endangered Species Act and demonstrate its flexibility. One of the proposed changes would require petitioners to solicit information from relevant state wildlife agencies prior to submitting a petition and to include any such information provided by the states in the petition. See Exhibit C3. In addition, U.S. Secretary of the Interior Sally Jewell announced that the bi-state population of greater sage-grouse does not require protection under the federal Endangered Species Act as a result of a public-private conservation partnership (Exhibit C4).

Significant Public Comments

1. FGC received a request to support a 2% increase in outdoor economy programs in the Interior and Environment Appropriations Bill for Fiscal Year 2016 (Exhibit C5).

Recommendation (N/A)

Exhibits

C1. Charlotte Ambrose report: *NOAA's "Species in the Spotlight" Campaign*

C2. NOAA Fisheries news release: *U.S. fisheries continue to rebuild; overfishing and overfished numbers at all-time lows*, Apr 15, 2015

C3. USFW news release: *U.S. Fish and Wildlife Service, NOAA Propose Actions to Build on Success of Endangered Species Act*, May 18, 2015

C4. USFW news release: *Successful Conservation Partnership Keeps Bi-State Sage-Grouse Off Endangered Species List*, Apr 21, 2015

C5. Email from Colin Cochran with America's Voice for Conservation, Recreation and Preservation, received Apr 20, 2015.

Motion/Direction (N/A)

STAFF SUMMARY FOR JUNE 10-11, 2015

16A. FUTURE MEETING ITEMS – TOWN HALL MEETING

Today's Item **Information** ☒ **Action** ☐

Discussion of potential Aug 3, 2015 town hall meeting

Summary of Previous/Future Actions

- Potential town hall meeting Aug 3, 2015

Background

At the Apr 8-9, 2015 FGC meeting, commissioners expressed an interest in having an open house or town hall meeting in conjunction with the Aug 4-5 meeting in Fortuna.

Significant Public Comments (N/A)

Recommendation

FGC staff: Staff recommends holding the town hall meeting from 6:30 to 8:00 p.m. on Aug 3, and that agenda items include: An explanation of how FGC operates, direction on how constituents can be most effective, and a question and answer period during which FGC staff would provide answers to previously-submitted written questions. This town hall meeting would not be a venue to debate or provide comments on items before FGC.

Exhibits (N/A)

Motion/Direction

FGC staff would appreciate feedback as to whether this proposal fulfills the expectations of Commissioners.

STAFF SUMMARY FOR JUNE 10-11, 2015

16B. FUTURE MEETINGS – NEXT MEETING

Today's Item **Information** ☒ **Action** ☐

Review logistics for the next FGC business meetings and identify potential agenda items.

Summary of Previous/Future Actions (N/A)

Background

The next Commission meeting is scheduled for Aug 4-5, 2015, at the River Lodge Conference Center in Fortuna; note that this is a *Tuesday/Wednesday* meeting. A town hall meeting will potentially be held the evening before on Monday, August 3 (see Agenda Item 16A). Staff does not anticipate any other special logistics for this meeting. Potential agenda items are included in Exhibit B1.

Significant Public Comments (N/A)

Recommendation

Provide staff with feedback on agenda topics to add or delete for the August meeting.

Exhibits

B1. Potential agenda topics for Aug 4-5, 2015, Commission meeting.

Motion/Direction (N/A)

16C. FUTURE MEETINGS – POTENTIAL FIELD TRIP

Today's Item **Information** ☒ **Action** ☐

Consider a potential field trip for the August 4-5, 2015 FGC meeting in Fortuna.

Summary of Previous/Future Actions (N/A)

Background

Trip #1: Gary Rynearson with Green Diamond Resource Company has extended an invitation to FGC members to tour timberlands property in the Eureka area to view spotted owl in its nesting/foraging area, as well as Pacific fisher and bat habitat. He will share a bit of the company's story and how it has been successfully producing timber products and protecting threatened and endangered species.

The tour can accommodate up to two FGC members. Mr. Rynearson has offered to provide transportation or members may provide their own vehicle. The tour will begin at 7:30 a.m. on Thursday, August 6 and end no later than noon.

Trip #2: Randy Lovell has offered to arrange a tour of shellfish growing activities and plans in Humboldt Bay, along with the associated work of the California Shellfish Initiative. Commissioners and staff can observe the leases, see new larval rearing systems deployed by various local mariculture companies, and see the construction site of California's only commercial oyster hatchery being built by Hog Island Oyster Company. Also on the tour is the nearby Samoa Pulp Mill and its additional aquaculture development potential.

The tour can accommodate up to two FGC members. Tour logistics can be arranged if there is sufficient interest.

Significant Public Comments (N/A)

Recommendation

FGC Staff: Staff asks that interested commissioners notify Mary Brittain at their earliest convenience.

Exhibits (N/A)

Motion/Direction (N/A)

16D. FUTURE MEETINGS – PERPETUAL TIMETABLE FOR REGULATORY ACTION

Today's Item **Information** ☒ **Action** ☐

Review and acknowledge requested changes to the perpetual timetable for anticipated regulatory actions.

Summary of Previous/Future Actions

- Adopted 2015 rulemaking calendar — Dec 3, 2014; Van Nuys
- Amended perpetual regulatory timetable — Feb 11-12, 2015; Sacramento
- Amended perpetual regulatory timetable — Apr 8-9, 2015; Santa Rosa
- **Today's requested changes to timetable — Jun 10-11, 2015; Mammoth Lakes**

Background

Through a memo (Exhibit D1) DFW has requested changes to the FGC 2015 regulatory timetable (Exhibit D2):

- Move the request to publish notice of the Commission's intent to amend the Dungeness crab sport fishing regulations in Section 29.85 of Title 14, California Code of Regulations (CCR), to the August FGC meeting in Fortuna, with adoption at the December meeting.
- Move the notice hearing for the proposed amendments to the definition of transgenic animals in Section 1.92, Title 14, CCR, to the August FGC meeting with adoption at the October meeting.
- Move the notice hearing for the proposed amendments to the falconry regulations in Section 670, Title 14, CCR, from the June FGC meeting to the October meeting, with discussion scheduled for the December meeting and adoption at the February 2016 meeting.
- Remove the previously proposed amendments to the wildlife rehabilitation regulations in Section 679, Title 14, CCR, from the 2015 regulatory calendar. DFW may bring this rulemaking package back for reconsideration in 2017.

Through a memo (Exhibit D3) FGC staff has recommended a change to the regulatory timetable and highlighted a Section 100 staff plans to submit this summer:

- Move the request to publish notice of proposed regulation for Commission procedures to the October FGC meeting with adoption in December 2015.
- Staff plans to file with the Office of Administrative Law a "Section 100" amendment for subsections 630(g)(7) and 630(h)(24), Title 14, CCR, related to Mirage Trail in Magnesia Spring Ecological Reserve.

Note that the requested changes listed above are reflected in Exhibit D2, the anticipated regulatory timetable.

Significant Public Comments (N/A)

Recommendation

Acknowledge that requested changes to the regulatory timetable are acceptable.

Exhibits

D1. DFW memo requesting changes to the regulatory calendar, received May 29, 2015
D2. Perpetual timetable for anticipated regulatory actions, updated June 2, 2015
D3. FGC staff memo recommending change to the perpetual timetable and Mirage Trail Section 100, dated June 1, 2015

Motion/Direction (N/A)

16E. FUTURE MEETINGS – 2016 MEETINGS

Today's Item **Information** ☒ **Action** ☐

Discuss meeting dates and locations for 2016. All Commission meetings will be two days and committee meetings half to full days.

Summary of Previous/Future Actions (N/A)

Background

It is important that staff begin securing meeting locations for 2016 to ensure that staff has adequate time to identify low-cost options that meet FGC's needs, request and receive bids from multiple facilities, secure contracts at least 60 days prior to a meeting, and, if for some reason a facility cannot be secured in a particular city, an alternative can be identified and pursued.

The proposed meeting dates and locations have taken into consideration state holidays, other meetings, and regulatory deadlines. Staff recommends avoiding scheduling meetings in San Luis Obispo, Palm Desert, Palm Springs and Santa Barbara because meeting and lodging costs are usually prohibitive relative to approved rates for state business.

Tribal committee meetings will be held the afternoon before the first day of the FGC meetings identified below.

January 20	WRC	Sacramento
February 24-25	Tribal and FGC	Sacramento
March 23	MRC	San Rafael
March 15	Teleconference	Sacramento & DFW Offices
April 13-14	FGC	Bay Area
April 22	Teleconference	Sacramento & DFW Offices
May 18	WRC	Redding
June 22-23	Tribal and FGC	Riverside
July 20	MRC	Arcata/Eureka
August 24-25	FGC	Fresno
September 21	WRC	Ventura
October 19-20	Tribal and FGC	Crescent City/Eureka
November 16	MRC	San Diego
Dec 7-8	FGC	San Diego

Other Relevant 2016 Meetings

- Western Association of Fish and Wildlife Agencies – January 7-10 and July 15-21
- Pacific Fishery Management Council – March 9-14, April 16-21, June 23-28, September 22-27, November 23-28
- Wildlife Conservation Board – Dates unknown at this time

Significant Public Comments (N/A)

Recommendation

Discuss the proposed dates and locations and make any recommendations for changes so that staff may finalize the proposal for approval at the August FGC meeting.

Exhibits (N/A)

Motion/Direction (N/A)

16F. FUTURE MEETING ITEMS – NEW BUSINESS

Today's Item **Information** ☒ **Action** ☐

No new business requests have been identified as of publication of the meeting binder.

Summary of Previous/Future Actions (N/A)

Background

On occasion issues that may need the attention of the Commission surface outside normal processes for requests. This agenda item provides an opportunity to address these issues and provide direction.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits (N/A)

Motion/Direction (N/A)

17. PUBLIC FORUM – SAME AS AGENDA ITEM 1

Today's Item **Information** ☒ **Action** ☐

Receipt of public comments and requests for regulatory and non-regulatory actions.

Summary of Previous/Future Actions

- **Today's receipt of requests and comments** **Jun 10-11, 2015; Mammoth Lakes**
- Direction to grant, deny or refer requests Aug 4-5, 2015; Fortuna

Background

FGC generally receives three types of correspondence: Requests for regulatory action, requests for non-regulatory action, and informational only. The Administrative Procedure Act requires action on regulatory requests to be either denied or granted and notice made of that determination (last year we used the terms "accept" or "reject"; for 2015 we are using the terminology directly from APA). At the end of public forum a motion may be made to provide direction to staff on any items for which FGC wishes to receive additional information or take immediate action. Otherwise, FGC will determine the fate of the regulatory and non-regulatory requests at the next commission meeting.

Significant Public Comments

1. See regulatory requests in Exhibit 1, under Agenda Item 1
2. See non-regulatory requests in Exhibit 2, under Agenda Item 1

Recommendation (N/A)

Exhibits (under Agenda Item 1)

1. Table containing a summary of new petitions for regulation change received by May 28 at 5:00 p.m., the comment deadline for the meeting binder.
2. Table containing a summary of new non-regulatory requests received by May 28 at 5:00 p.m., the comment deadline for the meeting binder.

3-13. Individual, new petitions and requests that are summarized in the tables.

14-20. Informational-only items; staff will not take any action on these unless otherwise directed by FGC.

Motion/Direction (N/A)

18. WILDLIFE RESOURCES COMMITTEE

Today's Item **Information** ☒ **Action** ☒

Discuss results and recommendations from the May 6, 2015, MRC meeting.

Summary of Previous/Future Actions

- WRC meeting — Jan 14, 2014; West Sacramento
- Recommendations accepted at FGC meeting — Feb 11-12, 2015; Sacramento

  The three accepted recommendations were:
  1. Authorized staff to work with DFW to prepare rulemakings for upland game and waterfowl hunting, and wildlife rehabilitation regulations consistent with DFW recommendations.
  2. Encouraged DFW to work with user groups to identify options that extend beyond the vehicle pass concept to capture all non-consumptive users accessing DFW lands, and return with revised options for consideration at the May WRC meeting.
  3. Requested that DFW bring to the May WRC meeting recommendations about the three predator policy structural matters. The predator policy workgroup was asked to explore the issues and possible solutions.
- Discuss and approve agenda topics — Apr 8-9, 2015; Santa Rosa
- WRC meeting (Agenda – Exhibit 1) — May 6, 2015; Los Angeles
- Discuss and approve recommendations — Jun 11, 2015; Mammoth Lakes

Background

FGC directs committee work. This agenda item is to receive results from the May WRC meeting, and discuss and consider any recommendations. Items that were referred to WRC for evaluation included:

- Predator management policy review
- DFW lands visitor pass
- Feral pig management
- Possession of game for processing into food (3080(e), FGC)

Documents in preparation for the meeting were posted on the FGC webpage: http://www.fgc.ca.gov/meetings/2015/May/050615wrcdocs.aspx

In addition, FGC staff identified the growing public participation and group dynamics of the predator policy workgroup as preventing meaningful progress.

Significant Public Comments (N/A)

Recommendation

WRC Recommendations:

1) FGC authorize staff to work with DFW to prepare rulemakings for sport fishing as proposed by DFW and for the DFW lands pass program that requires a vehicle or visitor pass where cost effective and practical.
2) FGC appoint (by special meeting) representatives to a tiered workgroup to facilitate addressing predator policy review and development. The tiered workgroup would consist of a drafting group (6 representatives of the key stakeholders) and a review group (no more than 10-20 to provide feedback to the drafting group). The final tier would be WRC itself that would make final recommendations to FGC. The tiered workgroup would be asked to bring a report to WRC by Dec 2015. WRC asked that staff prepare a nomination request, to be posted on FGC's website and distributed through our list server. In addition, WRC requested that DFW return to the Sep 2015 meeting to provide an update on the scientific issues.

While not recommendations, WRC also provided guidance to staff:

- WRC directed staff to work with DFW, the state legislature, and stakeholders to facilitate an acceptable and pragmatic solution to the wild pig issues presented and discussed during the May 2015 meeting.
- WRC requested DFW staff to report back at a future meeting with recommendations about how the results of DFW study may affect fishing regulations.

Exhibits

1. WRC May meeting agenda

Motion/Direction

Moved by _____and seconded by _____ that the Commission approves _____recommendations of the WRC.

19. INLAND FISHERIES AT RISK DUE TO DROUGHT

Today's Item **Information** ☐ **Action** ☒

(A) Adoption of emergency regulation to address inland fisheries at risk due to drought conditions:

I. Add Section 8.01, Title 14, California Code of Regulations (CCR), to create a process for temporarily closing rivers to fishing (Alternative I);

OR

II. Amend Subsection 7.50(b)(118), Title 14, CCR, to close 5.5 miles of the Merced River to fishing (Alternative II).

(B) Discuss the long-term approach to addressing inland fisheries at risk under varied water quality and quantity conditions

Summary of Previous/Future Actions

- **Today's adoption hearing** **Jun 10-11, 2015; Mammoth Lakes**

Background

(A) I - Add Section 8.01, Title 14, CCR, to create a process for temporarily closing rivers to fishing

This proposed emergency regulation would authorize DFW to close waters of the state to angling if the director or his or her designee determines one or more the following conditions have been met:

- Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days.
- Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.
- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.
- Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.
- Adult breeding population levels are estimated to be below 500 individuals.

This would create an additional process, similar to those found in Section 8.00, but not limited exclusively to low-flow closures. Conditions that would allow re-opening are also specified.

(A) II - Amend Subsection 7.50(b)(118), Title 14, CCR, to close 5.5 miles of the Merced River to fishing

The alternative is to adopt case-by-case emergency closures during drought conditions, beginning with a fishing closure of a portion of the Merced River from Crocker-Huffman Dam downstream to the Snelling Road Bridge, a distance of approximately 5.5 miles, through

December 31. Additional proposed emergency closures would likely be brought to FGC in Aug and Oct, with the possibility of requests for special meetings between regular meetings to address emergency situations.

(B) Discuss the long-term approach to addressing inland fisheries at risk under varied water quality and quantity conditions

Staff will share the concept for a long-term approach, also described in Exhibit 13C.1 under Agenda Item 13C.

Recommendation

FGC staff: Alternative I

DFW: Alternative I

Exhibits

1. DFW memo and statement of proposed emergency action for Section 8.01, Title 14, CCR
2. DFW memo, received May 28, 2015, and statement of proposed emergency regulatory action for Section 7.50(b)(118), Title 14, CCR

Motion/Direction

Alternative I

Moved by _____ and seconded by _____ that the Commission finds adopting the proposed emergency regulations is necessary for the addition of immediate process for temporarily closing rivers to fishing, as established in Section 8.01, Title 14, California Code of Regulations, as recommended by staff.

OR

Alternative II

Moved by _____ and seconded by _____ that the Commission finds adopting the proposed emergency regulations is necessary for the immediate protection of inland waters of the Merced River from angling due to drought conditions as stated in Section 7.50(b)(118), Title 14, California Code of Regulations, as recommended by staff.

20. NATIVE PLANT POLICY

Today's Item **Information** ☐ **Action** ☒

Adopt FGC policy for native plants (Exhibit 1).

Summary of Previous/Future Actions

- Received and discussed policy — Apr 16, 2014, Ventura
- Discussed policy — Apr 8-9, 2015; Santa Rosa
- **Today's adoption of policy — Jun 10-11, 2015; Mammoth Lakes**

Background

California hosts approximately 6,500 species, subspecies, and varieties of plants that occur naturally in the state, and many of these are found nowhere else in the world. Some are adapted to unique habitats or harsh conditions, and some occur in such low numbers or have been so impacted by human influence that they are at risk of permanent extinction. The state's policies and practices regarding native plants are in need of review and updating.

The legislature adopted a resolution in support of California's native plants (Exhibit 2). This resolution recognizes the vital role native plants have played in California's past and the need to conserve them for our future. In addition, it declared the third week of April, each year, as California Native Plant Week.

Significant Public Comments (NA)

Recommendation

FGC staff: Adopt policy.

Exhibits

1. *Draft Policy for California Native Plants*
2. Assembly Concurrent Resolution 173

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the proposed policy for California Native Plants.

21. DUCK STAMP PROPOSALS

Today's Item **Information** ☐ **Action** ☒

Approve Duck Stamp projects for Fiscal Year 2015-16 as proposed by DFW.

Summary of Previous/Future Actions (N/A)

Background

Fish and Game Code § 3702 requires FGC authorization for DFW to spend funds from the Duck Stamp Dedicated Account. DFW annually requests and reviews proposals for projects that meet statutory goals of this dedicated account, which are reviewed by the Duck Stamp Advisory Committee and then submitted to FGC as a list of recommended projects. Exhibit 1 contains a summary of the proposed projects for consideration and approval for funding with Duck Stamp Dedicated Account funds in Fiscal Year (FY) 2015-16.

For FY 2015-16, spending authority for expenditures from this fund is $1,804,000. After deducting the required administrative overhead costs (limited to 6%, per Fish and Game Code §3701, or $90,420) and the mandated amount portioned to Canada ($2.25 per stamp or validation, per Fish and Game Code §3704, equaling $134,377), and $297,000 to capital outlay projects, a total of $1,282,204 is available for new and ongoing projects.

A total of 19 projects are proposed in Exhibit 1.

Significant Public Comments (N/A)

Recommendation

FGC staff: Support DFW's recommendation.

Committee: (N/A)

DFW: Approve funding of $1,804,000 from the Duck Stamp Dedicated Account in FY 2015-16 for the recommended projects.

Exhibits

1. DFW memo and summary of recommended Duck Stamp projects, dated Apr 12, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission authorizes the expenditure of $1,804,000 from the Duck Stamp Dedicated Account for Fiscal Year 2015-16 for the specified projects.

22. UPLAND GAME BIRD

Today's Item **Information** ☒ **Action** ☐

Discuss proposed changes to upland game bird regulations.

Summary of Previous/Future Actions

- WRC vetting — Jan. 14, 2015; Sacramento
- FGC accepted WRC/DFW proposal — Feb 11-12, 2015; Sacramento
- Notice hearing — Apr 8-9, 2015; Santa Rosa
- **Today's discussion hearing — Jun 10-11, 2015; Mammoth Lakes**
- Adoption hearing — Aug 4-5, 2015; Fortuna

Background

FGC annually adopts regulations to set limits on upland game bird hunting. Initially DFW provides ranges until the conclusion of population survey efforts are completed in the spring. A final recommendation within the range will be provided at the Aug FGC meeting. Two changes are proposed for the 2015-2016 season:

1. Ranges for sage grouse
    - East Lassen Zone (two-bird permits) [0-50]
    - Central Lassen Zone (two-bird permits) [0-50]
    - North Mono Zone (one-bird permits) [0-100]
    - South Mono Zone (one-bird permits) [0-100]
2. Extend the close of shooting time for the spring wild turkey hunting by one hour. Shooting time for spring turkey hunters would close at 5:00 p.m. instead of 4:00 p.m.

Significant Public Comments

1. Center for Biological Diversity (CBD) requests FGC not permit any sage-grouse hunting in the 2015-2016 season to support conservation (Exhibit 2).

Recommendation (N/A)

Exhibits

1. Initial statement of reasons
2. Letter from CBD, received May 28, 2015

Motion/Direction (N/A)

23. WATERFOWL

Today's Item **Information** ☒ **Action** ☐

Discuss annual amendments to waterfowl regulations for the 2015-2016 season.

Summary of Previous/Future Actions

- Notice hearing — Apr 8-9, 2015; Santa Rosa
- **Today's discussion hearing** — **Jun 10-11, 2015; Mammoth Lakes**
- Adoption hearing — Aug 4-5, 2015; Fortuna

Background

The U.S. Fish and Wildlife Service (Service) annually establishes federal regulation "frameworks" in late July after staff analyze current waterfowl population data and gather input from the public. These "frameworks" describe the earliest waterfowl hunting seasons can open, the maximum number of days hunting can occur, the latest hunting seasons must close, and the maximum daily bag limit, among other things. States must set waterfowl hunting regulations within the federal frameworks.

Sections 202, 355 and 356 of the Fish and Game Code authorize FGC to annually adopt regulations pertaining to the hunting of migratory birds that conform with, or further restrict, the regulations prescribed by the Service pursuant to its authority under the Migratory Bird Treaty Act. FGC selects and establishes in State regulations the specific hunting season dates and daily bag limits within the federal frameworks.

Recommended regulation changes are:

- Changes in hunting season lengths (which may be split) between 38 and 107 days. Establish specific season dates and daily bag limits for each zone.
- Propose a range in subsections 502(d)(6)(B)6. and 502(d)(6)(B)7. for brant season length in the Northern Brant and Balance of State Brant special management areas.
- Minor editorial changes are also proposed.

Significant Public Comments

- Support for continuing the existing season of the North East Zone Goose Hunt, support for the current late season hunt for white geese in the North East Zone, possibly allowing hunting on Type C Wildlife Areas during the late season (Exhibit 2).

Recommendations (N/A)

Exhibits

1. Initial statement of reasons
2. Letter from California Farm Bureau Federation, received May 28, 2015
3. Draft environmental document

24. PACIFIC FISHER (CONSENT)

Today's Item **Information** ☒ **Action** ☐

Receipt of DFW's status report on the petition to list the Pacific fisher (*Martes pennanti*) under the California Endangered Species Act. DFW is expected to deliver the status report at the meeting.

Summary of Previous/Future Actions

• Receive petition	Apr 10, 2008; Bodega Bay
• Findings that listing is not warranted	Sep 10, 2010; McClellan
• Decision to set aside Sep 2010 decision	Nov 7, 2012; Los Angeles
• **Today's DFW's status report**	**Jun 10-11, 2015; Mammoth Lakes**
• Decide whether listing is warranted	Aug 4-5, 2015; Fortuna

Background

The status report represents DFW's final written review of the status of the Pacific fisher and is based upon the best scientific information available to DFW. The status review contains DFW's recommendation on the petition to list the Pacific Fisher as threatened or endangered.

At its November 7, 2012, meeting in Los Angeles, FGC met in executive session and, pursuant to court order, voted to set aside its September 15, 2010, findings rejecting the petition filed by the Center for Biological Diversity to list the Pacific fisher as a threatened or endangered species under the California Endangered Species Act. FGC also requested that DFW prepare a status review for FGC's consideration.

Today's receipt will provide at least 30 days for the public to review the report before FGC takes action, as required by Fish and Game Code.

Significant Public Comments (N/A)

This meeting is not intended for FGC discussion. However, under the Bagley-Keene Open Meeting Act, FGC must permit public comment on this item if requested.

Recommendation (N/A)

Exhibits

1. Petition from the Center for Biological Diversity to list Pacific fisher

Motion/Direction (N/A)

Moved by _____ and seconded by _____that the Commission adopts the Consent Calendar, items 24-27.

25. INITIAL PLM LICENSE AND PLAN (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Approve the initial Private Lands Wildlife Habitat Enhancement and Management (PLM) Area 5-year management plan, application and 2015 harvest program for two properties.

Summary of Previous/Future Actions (N/A)

Background

DFW has reviewed the application and management plan for this property and found that it is in compliance with FGC policies for private lands management (Exhibit 1).

Significant Public Comments

Concerns about hunting elk on Rafter L. Ranch if it becomes part of the PLM Program and requesting that the ranch's application be rejected (Exhibit 3). DFW Regional Manager responded to the comment (Exhibit 4).

Recommendation

FGC staff: Recommends approval under a motion adopting the consent calendar.

DFW: Recommends approving the 2015-2020 wildlife management plans, applications, and 2015 harvest programs under the conditions specified in Exhibit 2.

Exhibits

1. DFW memo
2. PLM initial annual details
3. Letter to DFW from Ron and Patricia Raybourne in opposition to D. Raffer L Ranch, LLC becoming part of the PLM Program, received Feb 2, 2015
4. DFW letter to Mr. and Mrs. Raybourne regarding Rafter L Ranch application for inclusion in the PLM Program, dated Mar 4, 2015

Motion/Direction

Moved by _____ and seconded by _____that the Commission adopts the Consent Calendar, items 24-27.

26. ANNUAL PLM HARVEST PROGRAMS (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Approve the annual Private Lands Wildlife Habitat Enhancement and Management (PLM) Area 2015 harvest programs on 35 properties.

Summary of Previous/Future Actions (N/A)

Background

DFW has reviewed the annual reports and annual renewal applications for these properties and found that they are in compliance with FGC policies for private lands management (Exhibit 1). Morisoli Ranch previously used Camp 5 Outfitters as its PLM operator and has rewritten its management plan to remove Camp 5 Outfitters from the responsibility for carrying out management activities in the PLM; DFW supports this change.

Significant Public Comments (N/A)

Recommendation

FGC staff: Recommends approval under a motion adopting the consent calendar.

DFW: Supports the change of Morisoli Ranch as owner and operator, and recommends approving the 2015/16 harvest programs for 35 properties, under the conditions specified in Exhibit 2.

Exhibits

1. DFW memo
2. PLM annual details

Motion/Direction

Moved by _____ and seconded by _____that the Commission adopts the Consent Calendar, items 24-27.

27. 5-YEAR PLM LICENSE AND PLAN (CONSENT)

Today's Item **Information** ☐ **Action** ☒

Approve the new 5-year Private Lands Wildlife Habitat Enhancement and Management (PLM) Area management plans for 12 properties.

Summary of Previous/Future Actions (N/A)

Background

DFW has reviewed the renewal applications and 5-year management plans for these properties and found that they are in compliance with FGC policies for private lands management. (Exhibit1).

Significant Public Comments (N/A)

Recommendation

FGC staff: Recommends approval under a motion adopting the consent calendar.

DFW: Recommends approving the specified 2015-2020 wildlife management plans, applications, and the 2015 harvest programs under the conditions specified in Exhibit 2.

Exhibits

1. DFW Memo
2. PLM 5-year plan details, 2015-2020

Motion/Direction

Moved by _____ and seconded by _____that the Commission adopts the Consent Calendar, items 24-27.

28. TRICOLORED BLACKBIRD

Today's Item **Information** ☐ **Action** ☒

Decide whether listing tricolored blackbird (*Agelaius tricolor*) as endangered under the California Endangered Species Act (CESA) may be warranted.

Summary of Previous/Future Actions

- Received petition — Oct 8, 2014
- FGC transmitted petition to DFW — Oct 15, 2014
- Published notice of receipt of petition — Oct 21, 2014
- Received petition and took emergency action to list — Dec 3, 2014; Van Nuys
- Received DFW's petition evaluation — Apr 9, 2015; Santa Rosa
- **Today decide whether listing may be warranted — Jun 11, 2015; Mammoth Lakes**
- If FGC moves species to candidacy, status report due — Jun 2016; TBD

Background

FGC listed the tricolored blackbird as endangered through an emergency regulation that will expire at the end of June 2015. CESA requires a petition evaluation be prepared by DFW within 90 days and received by FGC for action. Today, FGC will consider the petition, DFW's evaluation and other information to determine if listing may be warranted. If FGC finds listing may be warranted, a one year status evaluation begins before a listing decision is made.

Significant Public Comments

1. FGC has received over 3,500 form letters and other comments supporting the petition (exhibits 2-4 and 7).
2. FGC has received several letters opposing the petition from Daisy Cares with support from the California Chamber of Commerce, California Building Industry Association, and California Waterfowl Association (exhibits 5, 6 and 8).

Recommendation

FGC Staff: Accept the petition.

DFW: There is sufficient information to indicate that the petitioned action may be warranted; accept the petition.

Exhibits

1. DFW memo and evaluation report
2. Example form letter "Speak up for California's Tricolored blackbirds"
3. Letter from Joan Swenson, received Apr 9, 2015
4. Letter from San Bernardino Valley Audubon Society, received Apr 8, 2015
5. Letter from Daisy Cares, et al., to the California Department of Fish and Wildlife, received Mar 20, 2015

6. Letter from Daisy Cares, et al., to the U.S. Department of the Interior and the U.S. Fish and Wildlife Service, with appended references, received Mar 2, 2015
7. Letter from Center for Biological Diversity, received May 28, 2015
8. Letter from Daisy Cares, et al, received May 28, 2015

Motion/Direction

Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2074.2 of the Fish and Game Code, finds the petitioned action to list the Tricolored blackbird as an endangered species may be warranted based on the information in the record before the Commission, and therefore, designates the Tricolored blackbird a candidate for endangered species status. (Note: findings will be adopted at a future meeting.)

OR

Moved by _____ and seconded by _____ that the Commission, pursuant to Section 2074.2 of the Fish and Game Code, finds that the petition to designate the Tricolored blackbird as an endangered species under the California Endangered Species Act and other information in the record before the Commission does not provide sufficient information to indicate that the petitioned action may be warranted. (Note: findings will be adopted at a future meeting.)

29. BOBCAT TRAPPING

Today's Item **Information** ☒ **Action** ☐

Discussion of proposed regulation changes to implement the Bobcat Protection Act of 2013.

Summary of Previous/Future Actions

• WRC vetting	Jul 28, 2014; Sacramento
• WRC vetting	Sep 17, 2014; Sacramento
• Notice hearing	Dec 3, 2014; Van Nuys
• Update from DFW	Feb 11-12; Sacramento
• Update from DFW	Apr 8-9, 2015; Santa Rosa
• **Today's update and discussion hearing**	**Jun 9, 2015; Mammoth Lakes**
• Adoption hearing	Aug 4-5, 2015; Fortuna

Background

At its Dec 2014 meeting, FGC authorized staff to work with DFW to prepare a rulemaking to implement the Bobcat Protection Act of 2013 (Section 4155, Fish and Game Code) using readily identifiable features to delineate the boundaries of buffer zones where bobcat trapping is prohibited around national and state parks, national monuments, and national wildlife refuges in which commercial bobcat trapping is prohibited. FGC approved the concept of establishing bobcat trapping zones and prohibiting bobcat trapping in the balance of the state. In addition, FGC authorized inclusion of an option for a complete ban on commercial and sport bobcat trapping.

The notice of proposed regulatory action was published on May 29, 2015. The proposed regulatory changes will not affect the take of bobcats with a hunting license and bobcat tags or under a depredation permit issued by DFW.

Two options are proposed for consideration:

- **Option 1:** Create an extensive Bobcat Trapping Closure Area within which commercial trapping of bobcats is not permitted, as well as delineating property-specific closure areas around national and state parks and national monuments and wildlife refuges in which commercial bobcat trapping is prohibited. Fees to recover the costs of DFW's administration and enforcement of the regulations are also proposed to be established in Section 702.
- **Option 2:** A complete ban on commercial bobcat trapping in California. With the exception of depredation trapping, this option would ban all trapping of bobcats statewide.

DFW recommends implementing the designated bobcat trapping closures under Option 1 and monitoring the participation of trappers, enforcement effort and administration of the new regulation for a period of at least two years. To recover the costs of the new regulations in Option 1, DFW recommends the following fees:

Bobcat Trapping Validations	$1,137.00 per validation
Bobcat Shipping Tags	$ 35.00 per pelt

Special Presentation – Jean Su, Center for Biological Diversity (CBD)

President Baylis approved a request by CBD staff to provide a brief presentation with CBD's views of the fiscal and legal implications of adopting the statewide ban versus a zonal approach.

Significant Public Comments (received since the last meeting)

1. Mono County Board of Supervisors requests FGC consider including Mono County in the ban, or establishing buffer zones around national and state parks and the Mono Basin National Forest Scenic Area (Exhibit 4). *(A Mono County representative, Mr. Tim Alpers, will also speak to this request during public discussion.)*
2. Toiyabe Chapter, Sierra Club requests no trapping zone for Mono Basin Watershed (Exhibit 5).
3. Trinity County Board of Supervisors supports establishment of zones per Option 1 (Exhibit 6).
4. Over 1,000 letters supporting Option 2 (Exhibit 7).

Recommendation (N/A)

Exhibits

1. DFW memo
2. Initial statement of reasons
3. DFW presentation (to be hand-delivered at meeting)
4. Letter from Mono County Board of Supervisors, received Apr 9, 2015
5. Letter from Range of Light Group, Sierra Club Toiyabe Chapter, received Apr 4, 2015
6. Letter from Trinity County Board of Supervisors, received Apr 28, 2015
7. Sample letter from Emily Swayer, received Apr 21, 2015

Motion/Direction (N/A)

CALIFORNIA FISH AND GAME COMMISSION
RECEIPT LIST FOR REGULATORY ACTION: RECEIVED THROUGH 5-28-2015

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant (previously Accept): FGC is *willing to consider* the petition through a process **Deny (previously Reject):** FGC is *not willing to consider* the petition
Refer: FGC *needs more information* before deciding whether to grant or deny the petition

Green cells: Referrals to DFW for more information **Blue cells:** Referrals to FGC staff or committee for more information
Lavender cells: Accepted and moved to a rulemaking **Yellow cells:** Current action items

Date Received	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
4/29/2015	Lynn Boulton	Trapping		Request to ban any and all trapping in the Mono Basin National Forest Scenic Area.	**Action scheduled 8/4-5/2015**		
4/20/2015	James Keeling	Klamath River - Blue Creek Closure		Request Commission reconsider the Blue Creek decision, and hold a hearing on the matter in the region.	**Action scheduled 8/4-5/2015**		
5/28/2015	Kenny Priest	Klamath River - Blue Creek Closure		Petition signed by 497 supporters requesting the Commission reconsider the conservation closure on Blue Creek.	**Action scheduled 8/4-5/2015**		
4/26/2015	Dave Brabec	Clear Lake Hitch		Requests regulations to stop weed spraying along banks, and Hitch hatchery in the state park.	**Action scheduled 8/4-5/2015**		
4/28/015	Robert Rutkowski	Dcrab regulation--Whale entaglement		Requests measures to address whale entaglement from Dcrab pot or trap lines and reducing the number of lines in the water to protect whales.	**Action scheduled 8/4-5/2015**		
4/24/2015	Stash Elkin	Hedgehogs		Legalize possession of hedgehogs	**Action scheduled 8/4-5/2015**		
4/24/2015	Emma Hanna	Hedgehogs		Leglaize possession of hedgehogs	**Action scheduled 8/4-5/2015**		
4/28/2015	Deanna C.	Badger		Leglaize possession of badgers	**Action scheduled 8/4-5/2015**		
5/15/2015	Jorden Custard	Ferrets		Leglaize possession of ferrets	**Action scheduled 8/4-5/2015**		

CALIFORNIA FISH AND GAME COMMISSION
RECEIPT LIST FOR NON-REGULATORY REQUESTS: RECEVIED THROUGH 5-28-2015

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant (previously Accept): FGC is *willing to consider* the petition through a process **Deny (previously Reject):** FGC is *not willing to consider* the petition
Refer: FGC *needs more information* before deciding whether to grant or deny the petition

Green cells: Referrals to DFW for more information **Blue cells:** Referrals to FGC staff or committee for more information
Lavender cells: Accepted and moved to a rulemaking **Yellow cells:** Current action items

Date Received	Name of Petitioner	Subject of Request	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
5/4/2015	Roy Thomas	Fishing access	Requests information on how federal tax dollars to provide fishing and boating access is spent.	**Action scheduled 8/4-5/2015**		
5/26/2015	Scott McMorrow	SWAP	Requests amended language to reflect the 2013 intent of reducing only *illegal* hunting, fishing and harvesting.	**Action scheduled 8/4-5/2015**		

From:	Lynn Boulton
To:	FGC
Cc:	Marquart, Dave@Parks; Lisa Cutting; Geoffrey McQuilkin; Tim Bue; jkazmierski@fs.fed.us; Stacy Corless; Richard Hihn; Malcolm Clark; johnh@mills.edu; Constance Millar
Subject:	New Request: No Trapping in MBNFSA
Date:	Wednesday, April 29, 2015 10:57:01 AM

April 29, 2015

Mr. Sonke Mastrup
Executive Director
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Subject: No Trapping in MBNFSA

Dear Mr. Mastrup:

I am requesting that any and all trapping be officially banned in the Mono Basin National Forest Scenic Area (MBNFSA). It needs to be clearly stated as such in its management plan and clear to the local DFW staff that will need to enforce it.

The enabling legislation grandfathered in hunting, but not trapping. According to the 1984 California Wilderness Act, Title III: "…Such plan shall provide for hunting and fishing (including commercial brine shrimp operations authorized under State law) within the Scenic Area in accordance with applicable Federal and State law, except to the extent otherwise necessary for reasons of public health and safety, the protection of resources, scientific research activities, or public use and enjoyment."

People who participated in the discussions when the Scenic Area was established remember debates about duck and deer hunting. However, trapping was never discussed. They are surprised to hear it is mentioned in the management plan. It shouldn't have been. The Mono Lake Tufa State Natural Reserve does not allow trapping. State Natural Reserve is the highest protection that can be given a state park. Yet, because it is difficult to know if which agency's land you are on as you walk along the shore, the Mono Lake Tufa SNR changed its management plan to include hunting. Now the MBNFSA should change its management plan to exclude trapping for the same reason. The intent of establishing the Scenic Area was to preserve the stark, stunning, and natural beauty of the area and to prevent any further changes that would detract from that. It is not about extracting its resources. All that changed when BLM turned over the management of this land to the Forest Service.

The enabling legislation for the Mojave National Preserve specifically states the hunting and trapping are allowed. It wasn't specifically stated in the case of the Mono Basin NF Scenic Area which then left it up to the Department of Fish and Game who did not have specific instructions one way or the other and so, by default, trapping is allowed. It is time to change that.

Trapping is not in line with the charter of the Scenic Area, "…to protect its geologic, ecologic, and cultural resources…". Farming, ranching, and hunting activities in the Mono Basin fed the town of Bodie until the Great Depression. Deer and duck hunting are part of the local tradition. Fur trapping is not. Gardisky trapped the high Sierra from 1914-1922, but I don't think he embodies the purpose of why hunting was grandfathered in. He was busy extirpating the red fox in the Tioga Pass area and

killed the last wolverine in the Sierra Nevada in 1922.

Mono County has a strong tourist and eco-tourist economy especially in the Mono Basin. Over the past 30 years, the land use in the Mono Basin has completely changed from a declining agricultural area to a unique and protected natural reserve. The shift started in 1981 when the Mono Lake Tufa State Natural Reserve was established to protect the tufa formations, the wetlands along the lakeshore, and the thousands of birds that feed on brine shrimp and alkali flies. Three years later, the Mono Basin NF Scenic Area was established with a wider vision of protecting the whole watershed ecology and view shed. Per the Title III legislation, a beautiful visitor center was built, low-impact campgrounds were setup nearby, and self-guided interpretive signs set up. There are 50 volunteer naturalists who give interpretive talks, set up spotting scopes, and give canoe tours to enhance the public's appreciation of this unique treasure. The Mono Lake Committee has worked tirelessly for years to protect the lake's ecology and the riparian stream corridors.

Migrating through are 50-75,000 Phalaropes, 60,000 CA gulls (nesting), 1 million Eared Grebes, 15,000 Avocets, Sandpipers, Dowagers, Snowy Plovers, a variety of ducks, geese, etc. and 11 pairs of nesting Osprey. 250-300 species of terrestrial and songbirds visit the Basin from spring to fall. 80 different species stay with us in the winter. The longest running study of a bird species is conducted here at Mono Lake on the California Gulls. Local birders have participated in the annual Audubon Christmas Count for the past 35 years and the Mono Lake Committee organizes a Bird Chautauqua every year where people can explore the area with the experts.

Many mammals also live within the Scenic Area: bear, foxes, coyotes, deer, mountain lions, pine martins, short and long-tailed weasels, raccoons, rabbits (3 kinds), squirrels (2 kinds—and flying squirrels up the canyon), chipmunks, rodents, and even a badger. Trapping does not fit in. Many different stakeholders are involved in protecting the biodiversity and ecology of the Mono Basin and once this is on your agenda, they will send in letters of support.

The Mono Lake Tufa State Natural Reserve, with the help of the Mono Basin NF Scenic Area attractions, is the 4th most popular state natural reserve. Last year 365,000 visitors came from around the world. We who live here and the thousands of visitors who come to Mono Lake, to enjoy its natural beauty and wild character, value the thrilling sighting of a coyote, fox, weasel, or bobcat and knowing that they are still with us. We want Mono County to stay "Wild by Nature"--its motto

Regards,
Lynn Boulton
Lee Vining, CA

From:	James Keeling
To:	FGC
Subject:	Klamath river blue creek closure
Date:	Monday, April 20, 2015 9:59:20 AM
Attachments:	image.png

I would like to see what studies the department has done on their own.what evidence they have to close blue Creek besides they adopted the departments changes for the spit fishery like they said in the meeting and it made it sound like they adopted the blue Creek closure because they did not want to go against the tribe on two different subjects. And I would like to talk to a fish and game commission on the phone if that is possible. And have a public hearing on this in Humboldt and Delnorte county or see real evidence from the commission that there has been a problem at blue Creek and get it on the ballot again for another vote or to reopen it. And the economic downfall to this far outweighs a few incidental kills.
Sent from my iPhone

Saving the Hitch

First let me say I want the hitch to survive. Fish in all lakes are cyclic and right now in Clearlake the Hitch numbers might be down but, so are the Crappie, Bluegill numbers and the Threadfin Shad are scarce. I think the Bass numbers are down also. I get tired of hearing the Bass are causing the Hitch downfall. The Bass and the Hitch have lived together for over 100 YEARS. The biggest problem is the lack of water. The Hitch have not had a good spawn in 3 years due to drought conditions. 4 years ago there were small hitch everywhere.

We need to fix the creeks and that includes the mouths of the creeks. The lake needs to stay full longer so the hitch can even get up the creeks and if that means Yolo county doesn't get as much water so be it. It's hard to get a good count on spawning Hitch when they can't even make it to the creek. The Hitch also need more weed beds to hide in. The unregulated spraying needs to stop! The weed beds die off on their own every winter.

The State already owns property at Kelsey and Cole creeks. Why not put a Hitch hatchery in the state park?

Bass are not the only species to feed on the Hitch. There are more Catfish in the lake capable of eating full-sized Hitch than there are Bass. The Crappie also eat small Hitch.

Then there are the Eagles, Ospreys, Pelicans, Grebes, Cormorants, Herons, etc. They all eat more Hitch than the Bass do. I have seen groups of Pelicans herd Hitch into the shallows and gorge on thousands of them.

Let's focus on stream restoration and a lake that stays full enough for the Hitch to get in the creeks. If you try and take out predatory species out of the lake you can kiss the biggest Catfish derby west of the Mississippi goodbye as well as 60 or so less Bass tournaments annually. I know that not everyone is a fisherman but most people don't realize the importance of fishing for the local economy. Motels, gas stations, restaurants, etc., all are affected. The local businesses are having a hard enough time with what little tourism there is with the poor economy. There are small businesses closing all the time.

We all need to work together to get thru this drought. I still see the pear farmers using flood irrigation methods and the wineries have planted hundreds of acres of new grapes this summer and I have to wonder why?

Pray for rain!!

Dave Brabec

Clearlake Outdoors

497 supporters

Petitioning California Fish and Game Commission Jack Baylis
Reconsider the conservation closure of Blue Creek on the Klamath River
Started 4/22/2015 by Kenny Priest Eureka, CA

Blue Creek, which flows cold water into the Klamath River approximately 16 miles from the rivers mouth, is a critical refuge for migrating salmon and steelhead. It also provides some of the best fishing the Klamath River has to offer. On Friday, the CA Fish and Game Commission voted 4-1 in favor of closing this world-famous fishery to all non-tribal sports fishing from June 15 through Sept. 14 from ½ mile below to 500 feet above the confluence of Blue Creek.

This decision was not backed by any type of science, and there was no economic or environmental studies done. The Commission also chose to ignore the pleas of the CDFW, who suggested to take a step back and study the fishery first. Prior to the final vote, Commission President Jack Baylis stated, "Why don't we just close it and see what happens." Well, what happens is the anglers, fishing guides, and local businesses lose.

With this petition, I'm hoping we can get enough signatures to get this item back onto the agenda at the next Commission meeting in May. What I hope comes of this is to bring all parties back to the table and really study the problems. Let's capture some data and not base our decisions on hearsay. Klamath River salmon and steelhead runs are not in danger, in fact they are increasing. So why close one of the most beautiful and productive fisheries on the West Coast.

Petition update
Let's continue to let the F&G Commissioners know closing Blue Creek to fishing was a totally unwarranted decision!
May 27, 2015 — The next Commission meeting is June 10-11 in Southern California and as of today, the Blue Creek closure appears to be a done deal for this year. We were hoping that with enough public support, we could get this item back on the agenda for a review. It doesn't appear that will happen, but let's not give up the fight. Regulations on the Klamath are fluid, and with enough support we can get this ridiculous law over turned. Or at the very least we can agree on some type of compromise. Please sign and share and let the politicians know we're not giving up the fight to fish Blue Creek.

From:	Robert E. Rutkowski
To:	FGC; Wildlife DIRECTOR
Subject:	Reducing whale entanglements in California pot and trap gear fisheries
Date:	Tuesday, April 28, 2015 11:28:38 AM

Mr. Charlton H. Bonham, Director Department of Fish and Wildlife 1416 9th Street, 12th Floor Sacramento, CA 95814, Director@wildlife.ca.gov

Mr. Jack Baylis, President California Fish and Game Commission P.O. Box 944209 Sacramento, CA 94244-2090, fgc@fgc.ca.gov

Re: Reducing whale entanglements in California pot and trap gear fisheries

Dear Gentlemen:

New data reveals that a record number of whales were entangled in fishing gear off the U.S. Pacific coast last year and they are being reported at an even faster rate this year, prompting Conservation groups to urge California fishery managers to institute reforms to better protect marine mammals from injury, suffering and death.

According to the National Marine Fisheries Service, there were 30 unique reports of whale entanglements in 2014 off the West Coast—most of them gray or humpback whales caught in lines connected to crab pots—nearly twice the number from the previous year, and well above the average from the last decade (eight per year) or the previous decade (three per year). So far in 2015, there have been over 25 unique reports of entanglements in California alone, including most recently a killer whale that washed up dead north of Fort Bragg, Calif. entangled in crab gear.

It's heartbreaking to know so many whales are getting tangled up in fishing gear. They often drown or drag gear around until they're too exhausted to feed. Even more disturbing is that this problem is only getting worse.

Of the 30 cases last year, seven whales were disentangled and released free of lines, seven were found dead, two were observed to self-release and the remaining entangled whales had an unknown fate. Most recent entanglements have occurred with Dungeness crab gear, although lobster and spot prawn gear as well as gillnets have also been identified.

For whales that cannot free themselves or be disentangled by people, trailing fishing gear can add drag, which depletes energy reserves and ultimately leads to death, or can sever limbs and cut into flesh, which can cause infection or prevent mobility. One study found that fatally entangled whales can take an average of six months to die. There are also strong indications that the

problem could be even worse than the official National Marine Fisheries Service numbers show. Experts acknowledge there could be far more entanglements that go undetected. A photographic study from 2004–2006 indicated at least half the humpback whales off the West Coast had scars indicating prior entanglement.

Californians are incredibly lucky to share their coastal waters with these magnificent whales. We have a responsibility to act quickly to prevent more whales from getting tangled up in fishing gear. Work with groups and the fishing industry to protect whales and secure federally required permits that protect fishermen.

The California fishing industry has begun to address the risk of whale entanglements, through industry-led retrieval of lost crab pots, better gear marking and limits on the number of traps set. However, the combination of increasing populations of some whales and changes in ocean and fishing conditions have resulted in the unfortunate increase in entanglements, indicating more needs to be done. The California Dungeness Crab Task Force recently established a working group comprised of the fishing industry, state and federal agencies, entanglement experts and conservation organizations to address the problem.

Measures to address large whale entanglements from other regions have included fishery closures in areas where whales are feeding; lines that are designed to break away when a pot or trap catches on a whale; and reducing the number of vertical lines in the water. These and other measures should be considered, with a call for collaborative efforts to address the problems before next fall when the next Dungeness crab fishing season begins. The current Dungeness crab season on the West Coast ends June 30. The most commonly identified gear on the whales was from the Dungeness crab fishery.

There are simple, common-sense solutions that will protect the whales, and we're calling on the state to manage this fishery to protect whales. There should be meaningful changes to address this growing problem before the next crab season begins.

Thank you for the opportunity to bring these remarks to your attention.

Yours sincerely,
Robert E. Rutkowski

cc: House Minority Leadership

[redacted]

Re: Conservation groups letter:

http://earthjustice.org/sites/default/files/files/Take%20reduction%20request%20to%20CA_4-28-15.pdf

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2015 APR 24 PM 2:18
MLS

[redacted]

March 26, 2015

The Fish and Game Commission of California
P.O. Box 944209
Sacramento, CA 94244

To Whom It May Concern:

Have you ever seen an adorable prickly little hedgehog? These are cherished by families everywhere. They are considered marvelous and loving pets. But in our outstanding state of California, no one can experience the pleasure of owning one. The Fish and Game Commission has the power to change that. Hedgehogs make for great, easy pets. There is no harm in owning a hedgehog. And we are one of the last states that they are still illegal to keep as pets in. There is no reason to keep hedgehogs illegal as pets.

Hedgehogs make for wonderful, easy pets. According to Critter Connection, hedgehog store and breeders, Hedgehogs weigh two pounds at the maximum. A famous internet hedgehog, Biddy, is seen traveling to all sorts of places across America. This shows that it can be easy to travel with them. Since being considered pets, the amount of people that own them has almost doubled. This shows that they can be kept as real pets.

There is no harm in owning a hedgehog. Hedgehogclub.com says that their quills are smooth, unlike porcupines, and can not hurt you. It is rare for hedgehogs to target or attack at anyone or for that matter anything. Injuries most commonly when trying to pick them up. If you are gentle, you can not be hurt. Hedgehogs rarely hurt people.

Most other states have already legalized them. According Critter Connection, we are one of just three states where hedgehogs are illegal with no exceptions. In Canada, they are legal in every province beside Quebec where only African Pygmy hedgehogs are legal. Overall, in forty-four states, hedgehogs are entirely legal with no permits needed. There is no doubt we need to catch up with the rest of the states.

Based on all of the facts, there are only pros of legalizing hedgehogs as pets. They are magnificent pets. They cause no harm. And e are one of the last states they are still illegal in. Legalize them to give some families and people a little extra thing to be happy about.

Sincerely yours,

Stash Elkin
Sixth Grade Student, Incubator School

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2015 APR 24 PM 2: 16

MLS

[redacted]

March 27, 2015

California Department of Fish and Wildlife
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244

Dear Mr. Sonke Mastrup:

Imagine sitting at home, playing with your childhood pet, and suddenly hearing a knock at the door. You look outside to see officers approaching to confiscate that pet, and take it from your home. Imagine the heartbreak that you would feel, witnessing the pet that you love, being ripped away. This is what happens with domestic hedgehogs in our state. My goal is to make a difference in these laws, and legalize the possession of hedgehogs in California.

Hedgehogs are unjustly accused as illegal, due to an immoral law stating that any animal not specifically deemed legal are considered illegal. Among the many harmless animals on that list, there are hedgehogs. Hedgehogs could thrive in California. Since hedgehogs are meant to live in a warm, dry environment, California is the perfect place for them, and it would be unjust to take away a perfect home for them. I believe that it is cruel to mark these animals as technically illegal, and take away the perfect environment for them.

Hedgehogs are not difficult pets to own. First of all, they are quiet, and most will not destroy possessions. Depending on personality, they are calm and nondestructive. They are also hypoallergenic. For people with allergies, there are not many pet options besides reptiles and fish. It would be very pleasant to own an intelligent pet, that they can hold and play with. Hedgehogs are a very cheap pet, with proper effort. They need sparse visits to the vet, and only a few vaccinations. They have their own type of food, but it costs less, and they eat less than dogs.

One of the main reasons we are not allowed to own hedgehogs is because state officials are worried that they will cause damage to environments. In reality, if this is carefully considered, dogs and cats will cause much more damage if they get out. The diseases that hedgehogs may carry are preventable, and with a trip to the veterinarian, can be gotten rid of. The damage a hedgehog causes, as well as the chance of it escaping, are the same as that of a hamster. Farmers who are worried about crops being disrupted, are not aware of the fact that hedgehogs are insectivores, and they will not eat crops. Hedgehogs will not cause any more damage to an environment than any other domestic pet.

In conclusion, hedgehogs would make a perfectly harmless pet in California. They are nondestructive, hypoallergenic, low income, and easy pets to own. Please consider my letter and information, and take into account all of the evidence. Thank you very much.

Sincerely yours,

Emma Hanna
6th grade student, The Incubator School

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COMMISSION

2015 APR 28 PM 5:41

MLS

[redacted]

March 26, 2015

California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

Dear Mr. Jim Kellogg:

Did you know that California has the most illegal animals to keep as pets? There are animals you would expect, like tigers and crocodiles. Oddly, common animals such as ferrets, moles, squirrels, badgers, hedgehogs, and more are illegal to keep. You are not allowed to keep any of these animals without a license, which is extremely hard to obtain. These animals share one thing in common, there is little to no reason for them to be illegal. Today, I will talk about why it should be legal to keep a badger as a pet. Badgers are just like any other animal, and they follow their instincts and do what is natural to them. These reasons will prove why they are just like any other animal.

The first reason badgers should be legal is because they can be helpful. A badger can help remove pests. Because of their powerful hide, they are able to remove bees and insects. They can do this without any trouble. One family owned a badger. This badger was very helpful. It protected their children, since it could get rid of harm like bees and insects. The badger was very helpful to them, and they enjoyed it very much. Teddy Roosevelt himself owned a badger. The badger was a baby when he got it. He was able to train it to become a friendly companion.

The second reason badgers should be legal is because they are not dangerous unless provoked. A badger is actually about as powerful as a dog. Unless it is provoked in some way, a badger will not harm you. It is actually the other way around, badgers fear people. A bunch of people fear badgers because of an incident that happened involving a badger. Boris, a badger, was taken out of a zoo and attacked a handful of people. This left many people having a negative feeling toward badgers. Though this was just the badger's instinct. It felt threatened when taken out of its habitat, and was just using self defence to protect itself. In general though, a badger is actually afraid of people and will keep its distance. When you train it from a younger age, it will be calm around you.

The last reason badgers should be kept is that it will make them less endangered. Normally, a badger will live up to fourteen years in the wild. Though, many people have been tampering with their ecosystem. This causes less badgers to live to their natural age. People end up harming

badgers actually. A father and son went up a hill. They spotted a burrow, newly dug. They went back home to get their dog. Then, they put the dog by the hole. The badger came up, and the father and son immediately caught it. The authorities came soon after, though the injustice done to the badger was already done. Many people will harm badgers by pitting them against dogs. This is extremely cruel to them. Keeping badgers as pets will protect them from that. They will be able to enjoy a warm home, instead of being in their harmed ecosystem and having them be captured by others.

By allowing people to have pet badgers, you can save a generation of them. Badgers will be enjoyable companions who will protect you. Not only will they keep you safe, you will keep them safe. They will be able to live to their natural lifespan without being hurt from others. A badger will make a comfy companion. Roosevelt himself enjoyed his badger very much. It kept him as well as his kids comforted. A badger will be a well behaved pet when raised from a younger age. They will enjoy your company, as well as you will. Badgers will stay for another generation to come, if they are allowed to be pets.

Sincerely yours,

Deanna C.
6th grade student, The Incubator School

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2015 MAY 14 PM 3:56

April 13, 2015

Sonke Mastrup, Executive Director

P.O. Box 944209

Sacramento, CA 94244-2090

I am currently a California resident, living in the state of Texas. This letter is about the issue of the illegality of ferrets within the state of California.

Dear Executive Director Sonke Mastrup,

Within the state of California, ferrets are considered exotic animals, and have been given the stigma that if they escape their homes they will form businesses; and ruin the natural ecosystem. Yet here in Texas, ferrets are sold at pet stores with other domesticated animals

The reason for such a concern of whether ferrets are to be legalized, because there has been several majority votes for ferrets to be legalize. And yet, it seems as if it has been ignored. It affects every citizen with ferrets outside of the Golden State who wants to go in with their animal but can't because they might lose their pet that is a lot less dangerous to the ecosystem than a dog or cat.

It has been several decades since this issue has been brought up, and there are thousands of ferrets living within the state already. That have done no damage to the ecosystem. Why can you legalize Majuana but not just a one pound weasel?

Thank you for taking the time to read my letter.

Sincerely

Jorden Custard

[redacted], San Antonio, Texas, [redacted]

[redacted]

SAN ANTONIO TX 780
RIO GRANDE DISTRICT
15 MAY 2015 PM 4 1

California Fish and Game Commission
Sonke Mastrup
P.O. Box 944209
Sacramento, CA 94244

94244

From:	roy thomas
To:	FGC
Subject:	Fishing access loss of license funds and federal tax money
Date:	Monday, May 04, 2015 5:30:37 PM

A major reason California is last in fishing license sails per capita is access to many of our rivers and lakes.The constitution of the great state of California tries very hard to protect its peoples right to fish.It states very clearly that all land owned or ever owned by the state shall have the peoples right to fish from it preserved .The state and county's have closed the majority of bank fishing access points I know of.This does not have to be the case.The federal goverment provides over 2o,ooo,ooo dollars each year to california to provide fishing and boating access. I tried to find where this excise tax from imported fishing equipment was being spent.It appears to be a secret.I hope you check that it is going to restoring bank fishing access.Many of the county roads use to end at the Sacramento river.now most are blocked.Road 48 has almost a mile of gravel bar,now blocked off at the levee.The Russian river use to have lots of access.Now all blocked and private.Some of that 20 million needs to buy back access so people can fish again.Dose anyone on the comisson fish?Many have given up on California fishing for the lack of access to good fishing. Please do the right thing!!

May 26, 2015

California Fish and Game Commission
1416 Ninth St., Room 1320
Sacramento, CA 95814

RE: 2015 State Wildlife Action Plan, Chapter 5.3 - Bay Delta-Central Coast

Dear Commissioners:

The draft 2015 State Wildlife Action Plan (SWAP) calls for a reduction in **legal** hunting, fishing, and harvesting of aquatic resources in the Bay Delta-Central Coast Region.

This language in the draft SWAP conflicts with documents presented in 2013 regarding the Bay Delta-Central Coast Region. In 2013, CDFW released a Fact Sheet for the Region that called for the reduction of **illegal** hunting, fishing, and harvesting of aquatic resources.

It seems that the original 2013 concept of reducing illegal take has morphed into a general reduction in hunting, fishing, harvesting in the draft 2015 SWAP.

In the past, the Commission and the Department have sought science-based decisions concerning the regulation of California's wildlife. To that end, I've submitted to CDFW a Public Records Act Request for any data, reports, or information that support a reduction of **legal** hunting in the Bay Delta-Central Coast Region.

I urge you to please ask the Department to amend the language of the draft 2015 SWAP to reflect the 2013 intent of reducing only illegal hunting, fishing, and harvesting.

Here's a link to the 2013 Fact Sheet that calls for a reduction the illegal consumptive uses:

https://nrm.dfg.ca.gov/FileHandler.a...79077&inline=1

Here's where you can find the reductions to legal hunting and fishing in the 2015 SWAP:

https://nrm.dfg.ca.gov/FileHandler.a...=100044&inline

Chapter 5.3 – Bay Delta and Central Coast

Page 5.3-21 Table 5.3-4 – Key Pressures on Conservation Targets

Page 5.3-47 Conservation Strategies
Intended pressure(s) reduced: Recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources

Page 5.3-49 Conservation Strategy 7 (Management Planning)

Intended pressure(s) reduced: Dams and water management/use; shipping lanes; roads and railroads; recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources.

P 5.3-49 Conservation Strategy 8 (Partner Engagement):
Intended pressure(s) reduced: Dams and water management/use; shipping lanes; roads and railroads; recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources.

Page 5.3-50 Table 5.3-9 Stresses and Pressures for North American Pacific Coastal Salt Marsh
Hunting and Collecting terrestrial animals and Fishing & Harvesting aquatic resources are listing as pressures.

Page 5.3-51 Table 5.3-10 Conservation Targets and Strategies for the Bay Delta and Central Coast Province
Hunting and Collecting terrestrial animals and Fishing & Harvesting aquatic resources are listed as pressures.

Thank you.

Best Regards,
/s/
Scott McMorrow
Inverness, CA
[redacted]

From:
To: FGC
Subject: RE: condor
Date: Wednesday, May 27, 2015 12:57:40 PM

To whom it concerns, After reading this I have a conclusion about these here condors. I cannot believe that they are getting the lead form animals left in the field. I thing lead ammo is the scapegoat. I have also heard about them eating road paint. There is too much of a percentage of lead in the flock to be getting all this lead from ammo. One more thing about these buzzards, do we have people making a ajenda of this to ban things. I do not like the smell of this whole thing, I personally do not want to pay for feeding them. I hope to hell you are not using my lic. and tags fees for this. ARE YOU? That is my feelings on this. Gary Grabowsky Atascadero Calif.

From: "FGC"
To:
Cc:
Sent: Wed, 13 May 2015 14:23:48 +0000
Subject: RE: condor

The majority of information regarding condors may be found on the California Department of Fish and Wildlife's webpage: https://www.dfg.ca.gov/wildlife/nongame/t_e_spp/condor/ .

Attached are some additional reports that were provided to the Fish and Game Commission.

From: [redacted]
Sent: Tuesday, May 12, 2015 4:21 PM
To: FGC
Subject: condor

I have been trying to find out about condors eating bullets. Do you people know anything? I have e-mailed people in agencies involved in condor research--no

answer. I think it is a hoax. I do not think we need a lead ban, you people didn't do any research. I would like to see some proof for all this. Gary Grabowsky Atascadero,Ca.

From: kathy Lynch <[redacted]>
Date: May 20, 2015 at 5:59:19 PM PDT
To: "Sonke Mastrup", "Dan Yparraguirre"
Subject: FW: New study supports BASC position on lead ammunition | The British Association for Shooting and Conservation

-Sonke- Please share with the commissioners. Thank you. Kathy

http://basc.org.uk/blog/press-releases/latest-news/new-study-supports-basc-position-on-lead-ammunition/

The British Association for Shooting and Conservation

New study supports BASC position on lead ammunition

Posted on May 19, 2015

The results of a new study by Australia's National Health and Medical Research Council (NHMRC) supports BASC's position on lead ammunition: "no sound evidence, no change".

The NHMRC Statement and Information Paper "Evidence on the Effects of Lead on Human Health" includes the statement:

"It is not possible to conclude that lead was the direct cause of any of the reported health effects in individuals with blood levels less than 10 micrograms per decilitre. While the results from some studies indicate that blood levels less than 10 micrograms per decilitre may be associated with some health effects, the available cross section studies do not provide the type of convincing evidence that would enable public health experts and statisticians to make confident conclusions about cause and effect."

Alan Jarrett, Chairman of BASC said:

"This comprehensive study from Australia supports BASC's position that there is no need to change the existing UK Food Standards Agency guidelines on the consumption of game meat."

BASC continues to back compliance with the law on the use of lead ammunition and promotes good game handling practices.

ENDS
FSA guidelines on the consumption of game can be found here – http://goo.gl/VV6x8M

The NHMRC paper is here – https://goo.gl/IFU7Vf

BASC's policy on lead ammunition is here: – http://goo.gl/gpoZ3s

Keeping Northwest California wild since 1977

Sent via e-mail on date shown below

May 19, 2015

Mr. Charlton H. Bonham, Director
California Department of Fish and Wildlife
1416 Ninth Street, 12th Floor
Sacramento, CA 95814

RE: Department of Fish and Wildlife Status Report for the Northern Spotted Owl (*Strix occiedentalis caurina*)

Dear Director Bonham,

This letter is submitted on behalf of the Environmental Protection Information Center (EPIC), regarding the status of the Department of Fish and Wildlife's (Department) progress in producing its status report for the northern spotted owl (NSO) (*Strix occidentalis caurina*).

In 2012, EPIC, concerned with the long-term viability of the NSO in California, submitted a listing petition under the California Endangered Species Act to the California Fish and Game Commission (Commission). On August 7, 2013 the Commission voted to advance the NSO to candidacy status. The Commission adopted findings for this decision on December 11, 2013, thereby beginning the Department's obligation to conduct a status report within 12 months to aid the Commission in making its final determination. On October 9, 2014, the Department sought a six-month extension to complete the status report pursuant to Cal. Fish & Game Code § 2074.6(a). On December 3, 2014, the Commission approved the Department's six-month extension with a new due date of June 26, 2015.

It has come to our attention that the Department does not intend to submit its status report for the NSO on June 26, 2015, as was agreed by the Commission. In a personal communication with Ms. Carie Battistone at the Department's Wildlife Branch dated May 11, 2015, it was relayed to us that the Department does not intend to submit its status report for the NSO at the time agreed pursuant to the six-month extension granted by the Commission. Ms. Battistone imparted to us that the Department was facing "circumstances" that have caused delays in the production of its report. Ms. Battistone indicates that there is now no date-certain for submittal of the Department's status report for the NSO to the Commission. Further, Ms. Battisone stated that the Department hopes to submit the report to the Commission by the end of 2015.

Environmental Protection Information Center
145 G Street Suite A Arcata, CA 95521
(707) 822-7711
www.wildcalifornia.org

We wish to remind the Department that CESA allows for a single six-month extension on submittal of status reports. The Department has already applied for, and received a six-month extension on the production of its status report for the NSO. We see no statutory or regulatory authority which would allow the Department to push-out the date for submittal of its report indefinitely, or even beyond the six-month extension for submittal of the report.

Furthermore, EPIC questions the legality of the original six-month extension. As provided in Fish and Game Code § 2074.6(a), "The commission may grant an extension of up to six months if the director determines an extension is necessary to complete independent peer review of the report to provide a minimum of 30 days for public review of the peer reviewed report prior to the public hearing specified in Section 2075." From EPIC's understanding, the Department did not obtain the extension for either of the enumerated permissible reasons: is not even at the independent peer review stage and no report is available for public review. As such, the December 3, 2014 deadline extension appears to be wrongfully procured.

The ongoing delays in the production and submittal of the Department's status report for the NSO has harmed EPIC. We have long ago contracted an independent wildlife ecologist to prepare an independent status report for the NSO in California. The delays in the Department's submittal of its NSO status report have caused EPIC to retain our independent contractor much longer than was originally envisioned or desired because the timing of the submittal of our independent report is contingent upon the timing of the Department's submittal of its review. These delays have thus cost our organization valuable time, money, and resources.

Furthermore, the Department's failure to timely produce the status report harms EPIC's and the public's interest in the conservation of the NSO. Wildlife generally, and the owl specifically, are part of the public trust, and the State must manage the wildlife within its borders on behalf of its citizens. Because of the Department's delay, the Commission cannot act on the proposed listing. This delay directly harms the NSO—which is experiencing declining populations—because until the NSO is listed, it does not receive full protections under CESA.

EPIC therefore requests that the Department provide: (1) an explanation as to the reasons for delay in production of the NSO status report; (2) a date-certain for the submittal of its report to the Fish and Game Commission; and (3) a statement of the steps it will take to ensure this new date-certain will be met. We expect this information be provided no later than June 1, 2015. Failure to provide us with the requested information will compel us to seek alternate remedies.

Please do not hesitate to contact me as necessary if there are questions or if there is a need to discuss this matter further. EPIC looks forward to the Department's response.

Sincerely,

Rob DiPerna
California Forest and Wildlife Advocate
Environmental Protection Information Center
145 G Street, Suite A
Arcata, California 95521
Office: [redacted]
Email: [redacted]

Cc: Mr. Jack Bayless, President, California Fish and Game Commission
Mr. Sonke Mastrup, Executive Director, California Fish and Game Commission
Ms. Lacy Bauer, California Department of Fish and Wildlife

Dedicated to Preserving Your Rights To Hunt and Fish In the State of California

April 22, 2015

Mr. Rick Baylis, President
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Mr. Charlton H. Bonham, Director
California Department of Fish and Wildlife
1416 9th Street
Sacramento, CA 95814

Re: Deaths of Point Reyes Elk Herd

Dear President Baylis and Director Bonham:

The Outdoor Sportsmen's Coalition of California is a nonprofit organization of sportsman's clubs and individuals dedicated to preserving outdoor recreation in California. Our principal activities are to monitor legislation that might negatively impact hunting, fishing and other recreation, and to oppose unwise changes in laws and regulations relating to these activities.

The Outdoor Sportsmen's Coalition of California (OSCC) promotes the conservation enhancement, scientific management, and wise use of all our natural resources; OSCC seeks to end activities needlessly destructive to natural resources; OSCC endeavors to educate and encourage the public generally, and the youth specifically, to an understanding of the advantages and importance of the conservation and enhancement of our natural resources.

OSCC works to enhance outdoor opportunities for all citizens. With several thousand members located throughout California, we stay in contact with our membership via newsletters and the internet so they can be involved as they see fit.

I have read this article, "Conservationists Upset as Much of Point Reyes Elk Herd Dies," SF-Gate (http://m.sfgate.com/science/article/Conservationists-upset-after-nearly-half-tule-elk-6204983.php) and am disturbed by its content. The elk referred to in this article were in a locked pen. Therefore, somebody is responsible for their care and well-being. The evidence of neglect is that the wild, free roaming elk are doing fine while these fenced-in elk are not. If they cannot be properly cared for they should be released.

The way I see this, the Director of the Department of Fish and Wildlife is ultimately responsible for the well-being of these lost elk. Not only has this resource been harmed due to neglect, but many thousands of conservation dollars have also been wasted.

P.O. Box 848 Fresno Ca. 93712 Phone 559-225-6962 mail to: oscc@pacbell.net
http://www.theoscc.org

The Mission Statement (https://www.wildlife.ca.gov/Explore) of the Department of Fish and Wildlife is "to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public."

Among the responsibilities listed on the Fish and Game Commission's website (http://www.fgc.ca.gov/public/information/) are the following:

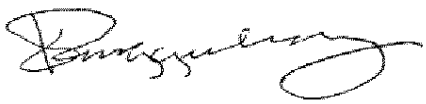
- Regulating uses of protected areas
- Authorizing terms and conditions for Private Lands Management Program, and
- Assuming a quasi-judicial role in considering appeal hearings for revocation of suspension of licenses and permits

Sportsmen are under continual assault from the Legislature, the Department of Fish and Wildlife and those that claim a higher degree of moral superiority. For years OSCC has worked for common sense in wildlife management. In addition, we also promote management based on good science by professionals in the department. Unfortunately we spend entirely too much time defending sportsmen against an agenda driven process, and I suppose that will not end anytime soon.

No one, however, can defend a loss of this nature, especially due to neglect. Had even one elk died, due to neglect or for any reason at the hands of a landowner or sportsman, the penalties would be severe and expensive.

AS SPORTSMEN AND SPORTSWOMEN WE EXPECT THE VERY SAME ACCOUNTABILITY BY THOSE RESPONSIBLE FOR THIS.

Sincerely,



Keith Ringgenberg
President, Outdoor Sportsmen's Coalition

cc: Governor Edmund G. Brown
Mr. Sonke Mastrup, Executive Director, California Fish and Game Commission
California Fish and Game Commission
Assemblymember Richard Bloom, Chair, Assembly Budget Subcommittee #3
Senator Lois Wolk, Chair, Senate Budget Subcommittee #2
Assemblymember Toni Atkins
Assemblymember Kristin Olsen
Senator Kevin de Leon
Senator Robert Huff
Senator Jean Fuller
Mr. Peter Fimrite, SF-Gate
Outdoor Sportsmen's Association of California

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Region 1 – Northern
601 Locust Street
Redding, CA 96001
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION
2015 APR -9 AM 10: 15
MCS

April 3, 2015

Subject: Elk Depredation in Round Valley, Covelo

Dear Covelo Landowner:

Your letter of January 13, 2015 to the Governor was forwarded to the Department of Fish and Wildlife (Department) for response. You expressed concerns regarding property damage resulting from an expanding elk population in Round Valley near Covelo.

Tule elk are native to California, originally ranging from east of the foothills of the Sierra Nevada, west to the coast line and as far north as the headwaters of the Sacramento River south to the Tehachapi Mountains. Some accounts indicate that the number of Tule elk may have approached 500,000. Their numbers were reduced to near extinction through un-regulated hunting. Efforts to restore this California-native species began in the early 1900s, and these efforts returned Tule elk to the Cache Creek area and many other portions of their historical range. It is a key part of the Department's mission to manage and restore native species. The Department has relocated elk several times in or near Mendocino County between 1978 and 1990. Some elk from these releases were fitted with radio (VHF) transmitters and subsequently dispersed into Mendocino County. For example, at least 15 elk released near Lake Pillsbury moved about 14 miles southwest and became established at Potter Valley within the Mendocino unit by the end of 1981. Although most releases occurred on or near public land (such as Elk Creek and Lake Pillsbury), Tule elk subherds became established primarily on private property.

Roosevelt elk are also native and were once widely distributed in Mendocino County and in the coastal redwood forests. Periodic sightings of elk in Laytonville, Sherwood Valley and Fort Bragg have been reported as recently as 2013. Some of these appear to be the Roosevelt subspecies or possible Roosevelt/Tule elk hybrids, however genetic analysis has not been performed to confirm/refute this.

There are several options available to address elk depredation, and the Department is available to discuss them at your convenience. Among them are the take of elk through hunting or under a depredation permit. Opportunities are available for landowners to charge hunters a fee when providing hunting access. Such fees may be realized by drawing a Cooperative Elk Hunting Permit (landowner tag), enrolling in the Private Lands Management Program, or providing access to a hunter(s) who has drawn an elk tag for the Mendocino Elk Hunt Zone. The Department has proposed

regulations to the Fish and Game Commission that would establish additional elk hunts throughout the state using the Departments Shared Habitat Alliance for Recreational Enhancement (SHARE) program. Under the SHARE program, participating landowners receive compensation and liability protection in exchange for allowing access to hunters. Other options can include elk deterrence techniques and possibly elk exclusion fencing.

Environmental Scientist Scott Koller covers depredation issues, among other duties, in the Mendocino County area for the Department's Northern Region Wildlife Program. He has assisted other landowners with elk depredation concerns and is available to help you as well. He can be reached at (707) 456-0329.

Sincerely,

Neil Manji
Regional Manager

cc: Assembly Member Jim Wood
State Assembly (District 2)
Ukiah Valley Conference Center
200 S. School Street, Suite D
Ukiah, CA 95482

Senator Mike McGuire
State Senate (District 2)
200 South School Street, Suite K
Ukiah, CA 95482

Sonke Mastrup, Executive Director
California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

ec: Mss. Karen Kovacs, Renee Willgrubs, Susan LaGrande
Messrs. Richard Callas, Scott Koller, Craig Stowers, Joe Hobbs, Wayne Kidwell, Dan Yparraguirre, and Eric Loft
Department of Fish and Wildlife
Karen.Kovacs@wildlife.ca.gov, Renee.Willgrubs@wildlife.ca.gov, Susan.LaGrande@wildlife.ca.gov, Richard.Callas@wildlife.ca.gov, Scott.Koller@wildlife.ca.gov, Craig.Stowers@wildlife.ca.gov, Joe.Hobbs@wildlife.ca.gov, Wayne.Kidwell@wildlife.ca.gov, Dan.Yparraguirre@wildlife.ca.gov, Eric Loft@wildlife.ca.gov

CALIFORNIA SPORTFISHING LEAGUE

RECEIVED CALIFORNIA FISH AND GAME COMMISSION
2015 APR 22 PM 2:06

April 21, 2015

The Honorable Jerry Brown
State Capitol
Sacramento, CA 95814

Dear Governor Brown:

The California Sportfishing League (CSL) has released a study that finds that the high cost of purchasing an "annual" recreational fishing license has proven to be a formidable barrier to access and has contributed to an unprecedented decline in recreational fishing.

As you consider public policy related to recreational fishing, we would encourage your administration to consider the findings of our recent study. This comprehensive study may be the first time an effort has been made to compare the state-by-state cost and value of annual fishing licenses. The results provide California policy makers an insight as to how costly annual fishing licenses are impacting participation rates, and how it could harm the communities dependent on recreational fishing for $4.9 billion in economic activity each year.

The study finds that, since 1980, annual recreational fishing license sales have declined by over 55% in a state that has witnessed a near 60% increase in population. It also reaches an alarming projection that there could be fewer than 500,000 annual fishing licenses sold by 2027.

Key Findings

Fishing in California is Costly

- California requires the 2nd highest cost fresh/saltwater annual fishing license in the U.S. What once sold for $5 in 1980, costs $47.01 today, not including additional permits that could increase the cost to as much as $120 a year.

- California's "annual" base residential license of $47.01 is 66% above the average fishing license cost of all coastal states ($28.30) and 76% above the average fishing license cost for all states ($26.73), not including additional permits.

California Offers Less Value Than Any Other States

- Even though Washington's saltwater/fresh water "combo" license is the costliest license in the U.S., many states, including Washington, offer greater savings and value to their anglers by requiring fewer permits, and the option of purchasing a fresh or saltwater license, independently, at a reduced price. California does not.

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- California also operates under an antiquated calendar system, whereby licenses expire on December 31st of every year, regardless of when purchased.

Decline in License Sales Exposes Threat of Death Spiral

- Despite having one of the longest coastlines in the U.S.; over 4,000 lakes; and thousands of rivers and streams; California's fishing participation rate is ranked dead last in the US.

- Since 1980, when annual licenses were sold for as little as $5.00, California's annual fishing license sales have dropped by more than 55% (1980: 2.26 million; 2014: 990k).

- If the 35-year trend remains constant, annual fishing license sales could fall below 500,000 by 2027, or another 49% over the next 12 years. This downward trend could accelerate if fees are increased substantially or new regulations are imposed.

The study also introduces policy recommendations as to how the state could address high costs and unwarranted restrictions on fishing that have led to an unprecedented and alarming trend. The state has a strong incentive to consider them, as fishing licenses are a major source of revenue for fishing and wildlife conservation programs.

If the State of California recognizes the economic value of protecting recreational fishing, it needs to take immediate action to stop a rapidly declining participation rate from turning into an out-of-control death spiral.

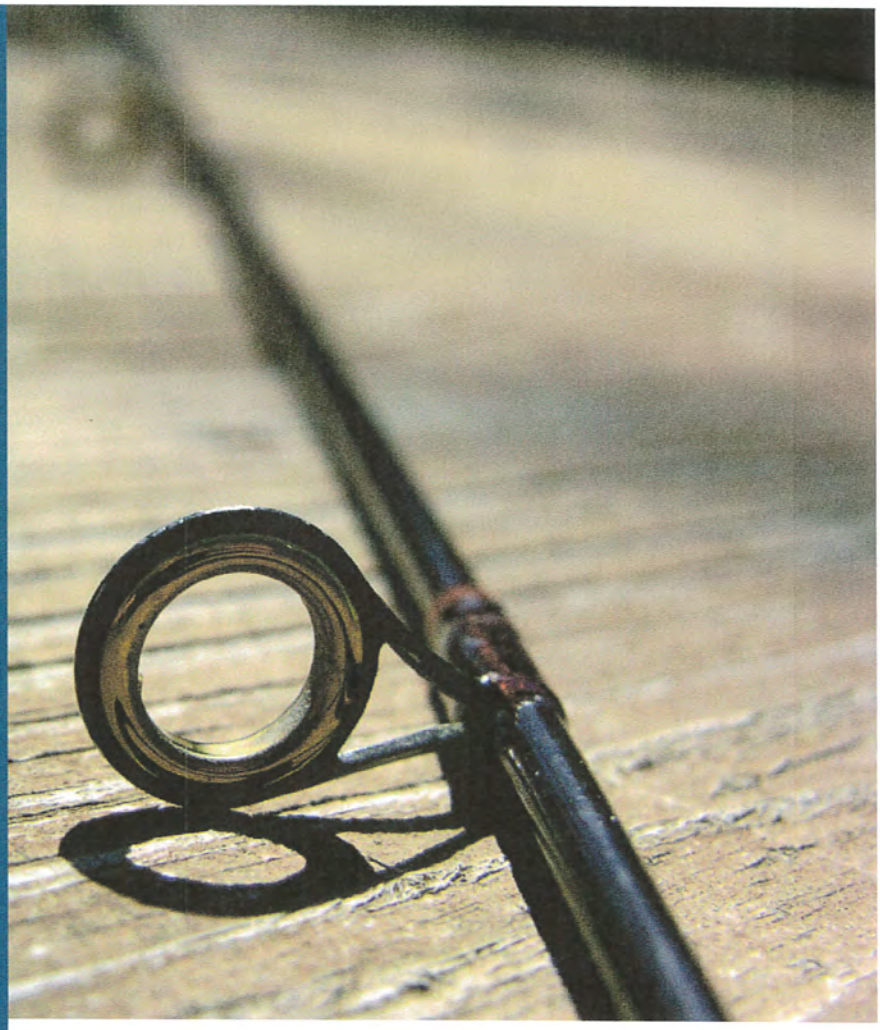
Reforming a costly and antiquated licensing program and lifting unwarranted restrictions on recreational fishing are the first steps to protecting a great form of family recreation that supports jobs and our state's economy. We would welcome the opportunity to work with you to provide a solution.

If you have any questions, feel free to contact our legislative advocate, George Osborn, at (916) 446-7752. Thank you in advance for considering the study's findings and the future of recreational fishing.

Sincerely,

Marko Mlikotin
Executive Director

cc: California Fish and Game Commission
California Fish and Wildlife Director Charlton H. Bonham



STUDY:

Are Costs, Lack of Value Contributing Factors to an Unprecedented Decline of Recreational Fishing in California?

CALIFORNIA SPORTFISHING LEAGUE

Presented by the
California Sportfishing League

March 23, 2015

/CASportfishingLeague

The California Sportfishing League (CSL) is a nonprofit coalition of fresh and saltwater anglers, and small business owners devoted to protecting access to recreational fishing. Recreational fishing contributes over $4.9 billion annually to California's economy, supporting outdoor tourism and jobs, and generates a substantial amount of tax revenue for state and local government. For more information, visit **www.SportfishingConservation.org**

INTRODUCTION

The California Sportfishing League (CSL) is the state's leading advocate for salt- and freshwater recreational fishing. With over 10,000 Facebook Fans and growing, CSL actively engages California anglers on various public policy issues concerning recreational fishing. Chief among anglers' many concerns is the future of recreational fishing and the high costs associated with their favorite pastime.

The posts on CSL's Facebook page are clear: California's recreational anglers have become increasingly frustrated with the state for increasing the cost of fishing, all the while imposing greater barriers to access, and constantly adding new and burdensome regulations.

Based on the number of concerns expressed, CSL chose to investigate whether or not the cost of fishing licenses in California was truly too expensive in comparison to other states. Are California licenses a good value? Are costs discouraging participation? If so, what are the consequences for the long-term future of recreational fishing, and the jobs and communities dependent on it?

The results were just as much surprising as they were alarming, and they underscored the need for CSL to release its findings to the public — especially if recreational fishing is to be an affordable form of family recreation, a source of food for the table, and a creator of jobs.

METHODOLOGY

CSL conducted a state-by-state analysis to measure the value of state "**annual**" fishing licenses. CSL did not compare "reduced-fee" licenses, as the terms and definitions differ from state to state, and annual licenses represent the most common license purchased. For example, California offers lifetime licenses and discounts for seniors, veterans, youth and disabled Americans.

CSL found the cost of a resident annual fishing license and term of license (12-month v. calendar year) on each state's individual website or by directly calling state fish and wildlife offices.

By using U.S. Census data,[1] CSL compiled all state participation rates by combining the study's "Fished Only" and "Fished and Hunted" percent of population. This number is reflected as "Participation Rate."

Our analysis below defines "**value**" as the price and term of the annual state license (12-month vs. calendar year).

FINDINGS

California Anglers Are Experiencing High Costs

In 1980, California's annual fishing license fee was a mere $5.00.[2] Today, California's annual resident fishing license is the second highest in the Country,[3] at $47.01 for a base "annual" license,[4] excluding permits and stamps that a substantial number of anglers are required to purchase throughout the year. If an angler purchased every available permit and stamp to catch all the various fish in California, fees could exceed $120 per calendar year.[5] The price to fish for a family of four, excluding cost for tackle, transportation, food or lodging can easily cost several hundred dollars or more.

"It's simply TOO EXPENSIVE to buy a license anymore!"

- Central Valley Angler on f

California's "annual" base residential license is 66% above the average fishing license cost of all coastal states ($28.30) and 76% above the average fishing license cost for all states ($26.73),[6] and these figures do not include the extra fees California requires for additional permits.

Only the State of Washington surpasses California for the priciest fishing license in the U.S., at a cost of $54.25 per year for a salt/freshwater combo, and Washington also operates under a calendar system. However, the state does present price conscious anglers greater choices by offering the option of purchasing a freshwater-specific license for $29.50 or a saltwater-specific license for $30.05.[7] With exception to mostly shellfish and fishing on the Columbia River, the state also appears to mandate fewer permits than California.[8] All these options may be contributing factors to why Washington's fishing participation rate is 17%, or nearly three times that of California.[9]

California's So-Called "Annual" License Provides Least Bang for the Buck

Value is just as important to anglers as cost. So, what are they getting for their money?

The California Department of Fish and Wildlife (DFW) offers what they call an "**annual**" fishing license. However, California's annual fishing licenses operate on a calendar system, which expires on December 31 of every year, regardless of when purchased.[10] In reality, an annual license can expire just months after being purchased. It is truly an antiquated system that motorists would never tolerate if the Department of Motor Vehicles applied the same system to car registration fees.

While 13 other coastal states practice such a calendar system, their annual fees are significantly less expensive, with one state offering a calendar year fishing license for a mere $8.50.[11] In fact, when compared to all states offering a calendar year license, California's license costs 84% above the national average price ($25.52).[12] Again, these figures do not include the extra fees for additional permits.

"A good change would be to have a YEAR'S worth of use from the date purchased!"

- California Angler on

Even if a California angler is cost conscious or fishes infrequently, California's two-day license costs $23.50 (not including additional permits/stamps),[13] or more than the annual resident license offered in 19 other states and just half the cost of California's annual license.[14]

According to the most recent records available, DFW sold approximately 445,000 two-day fishing licenses[15] at a cost of $9.50 in 1999.[16] By 2015, the number of 2-day licenses plummeted 78% to approximately 96,000.[17] California also offers a lifetime license, with no expiration date. Its sales have been fairly consistent at roughly 11,000 since 2009.[18] If it was the state's goal to maintain fishing participation rates by offering lifetime and short-term licenses at a lower cost, that goal has not been achieved.

"Look at the cost from $5 a couple decades ago to getting close to $100 when all the bells and whistles are included. Then there are all the complex and confusing regulations."

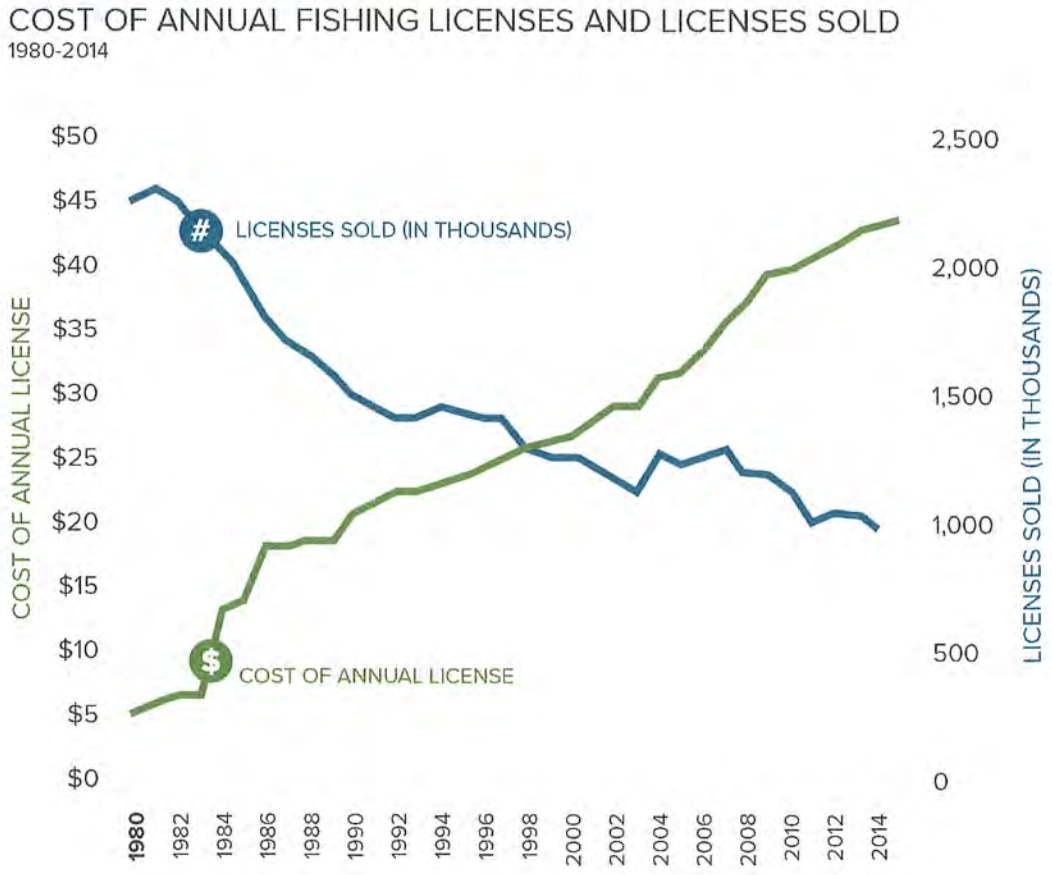
- Santa Rosa Angler on

As is the case in Washington, it is also important to note that several coastal states (9) sell saltwater and inland fishing licenses separately, providing considerable savings depending on one's fishing preference.[19]

Higher fees have not benefitted the state's fish stocking programs, as it has been widely reported that DFW is struggling to finance these programs. Much to the dismay of several rural counties dependent on fishing for outdoor tourism and tax revenue,[20] DFW announced in November of 2014 that it was reducing the average size of stocked trout by half due to budget constraints.[21]

Furthermore, fishing license fees have been subsidizing the cost of regulating the state's commercial fishing industry as far back as 2007, which is disingenuous to anglers at best, and potentially unlawful at worst.[22] If such funds were allocated properly, an additional $17 million a year, or more, could be invested in the state's fishing programs.

CONSEQUENCES OF HIGH COSTS



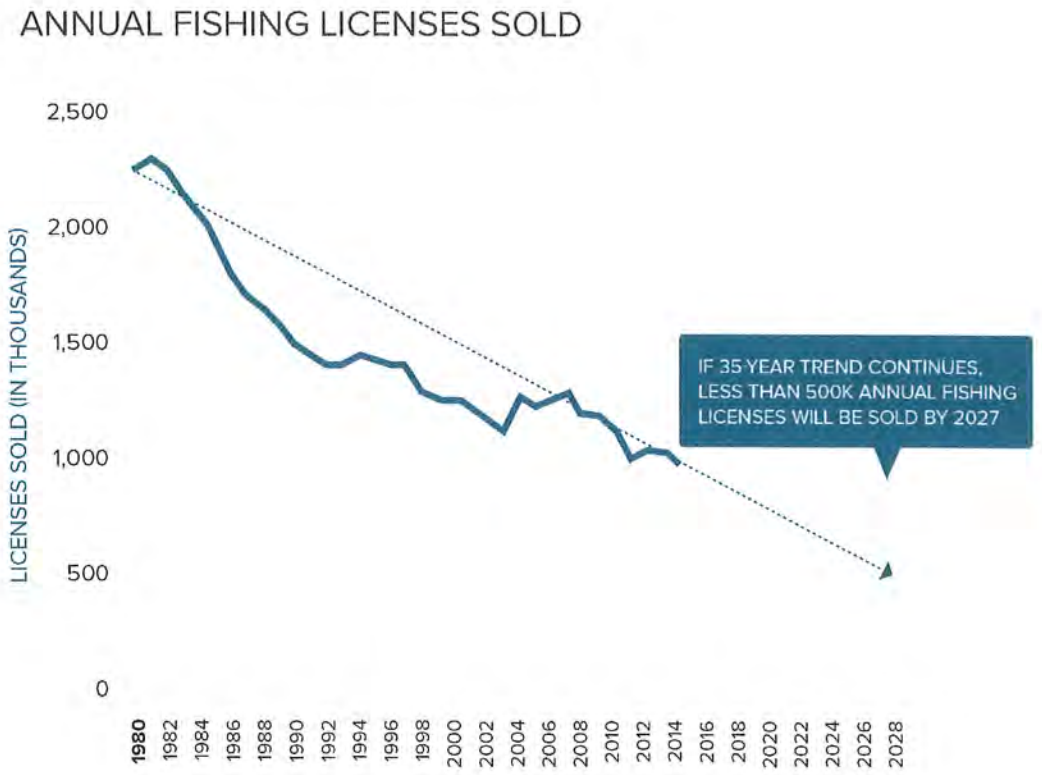
Unprecedented Decline in Recreational Fishing

Despite one of the country's longest coastlines; 4,000 thousand lakes/reservoirs and over 20,000 registered ponds; and thousands of miles of streams and rivers; California has experienced an unprecedented decline in recreational fishing.

According to the U.S. Census, 10% of California's population fished in 2001,[23] tied for the 46th place in participation.[24] Ten years later, California's fishing participation rate plummeted to just 6%[25] and ranks dead last in the nation.[26]

Since 1980, when annual licenses were sold for as little as $5.00, California's annual fishing license sales have dropped by more than 55% (1980: 2.26 million[27]; 2014: 990k[28]), while our state's population has increased by nearly 60%. In 2014, 40,000 fewer annual fishing licenses were sold compared to 2013.[29]

If the 35-year trend remains constant, annual fishing license sales are expected to drop below 500k by 2027, or another 49% over the next 12 years. Should this occur, between 1980 and 2027, annual license sales will have dropped 78%.[30] This downward trend could accelerate even faster if fees are increased substantially, or new regulations are imposed that increase costs or barriers to fishing.



Other Contributing Factors

In addition to expensive fishing licenses, there are many other economic factors and social reasons as to why fishing participation in California has decreased dramatically. While not the subject of this study, it is important to underscore that restructuring California's fishing fees alone may not stop fishing's declining participation rate. There is little doubt that regulatory barriers to access are also major contributing factors to California's accelerated decline in fishing.

These barriers include, but are not limited to: Marine Protected Areas (MPAs) that deny recreational anglers access to approximately 800 square miles of California coast (even though commercial fishing is the greatest cause of overfishing); outright fishing bans and illegal local fishing ordinances; new burdensome regulations; and fewer resources spent on state conservation programs that protect wildlife and stock fish.

A CALL TO ACTION

If California's policy makers continue to ignore these facts, they stand to harm the state's economy and specifically, the communities and businesses dependent on outdoor recreation and tourism for jobs.

While our state's fishing participation rate is ranked last, the 2010 U.S. Census reports that California is still home to roughly 1.7 million anglers,[31] one of the largest consumer markets in the country. As a result, recreational fishing contributes over $4.9 billion annually in economic activity,[32] while commercial fishing only generates an estimated $1.7 billion in economic activity.[33]

This is why so many fishing tackle manufacturers, boating and outdoor apparel companies were founded here in California, and why so many more find California to be a lucrative consumer market. What's more, fishing makes California an attractive destination for tourists who spend millions of dollars each year to visit our communities. But, this is likely to change.

High costs are barriers for all forms of outdoor recreation, but it is abundantly clear that the significant decline in recreational fishing will continue, especially as fewer young people select fishing as a form of outdoor recreation. This point is underscored by a study commissioned by the American Sportfishing Association, which found that 71% of anglers first started fishing when they were under 18 years old.[34] Fishing's future is dependent on more young people being introduced to fishing, and the best way to do that is to make it more affordable for families.

Hispanics, California's fastest growing demographic, cannot be ignored, either. A market study prepared for the Recreational Boating and Fishing Foundation found that recreational fishing's costly barriers to entry are directing Hispanics to other more affordable forms of outdoor recreation.[35]

CONCLUSION

The high costs and lack of value of a California fishing license, combined with high regulatory barriers, have contributed to an unprecedented decline of recreational fishing in the state.

CSL's analysis validates the concerns raised by our Facebook Fans. It is expensive to fish in California and ranks second only to Washington for the most expensive state to fish both salt- and freshwater. However, one can also make a strong case that California is comparatively more expensive than Washington since California requires a substantial number of anglers to purchase additional permits. California also does not offer the option of purchasing a saltwater or freshwater license separately, at a reduced rate.

Combine the high costs with an antiquated calendar-year license system, and California provides the least value to anglers in the United States. As a result, fewer Californians are being introduced to fishing and many more no longer participate in a great form of family-oriented outdoor recreation.

The dramatic downward trend in the number of annual state licenses sold should be a wakeup call for California policy makers. If the State of California sees the value of recreational fishing and outdoor tourism, it needs to offer a better value and remove unwarranted barriers to access in order to pull fishing participation out of its inevitable death spiral.

The important question CSL cannot address is whether policymakers will recognize that costs and barriers to entry are truly a threat to recreational fishing in a state with an abundance of natural resources, and for an economy heavily dependent on a $95 billion tourism industry.

RECOMMENDATIONS

The Department of Fish and Wildlife should conduct a full evaluation of its current licensing structure in order to develop a new one that not only ensures that recreational fishing is affordable and accessible, but also supports fishing and wildlife programs for years to come.

With even lower participation rates anticipated in the immediate future, fewer anglers will be financing fish stocking and conservation programs that are becoming more costly. Taking into account CSL's analysis, higher fees are not a realistic solution to generate greater revenue for the state. Higher costs and poor value will only encourage more anglers to abandon fishing and raise barriers to entry, putting critical fishing and conservation programs at further risk.

Given this reality, the need for full-scale reform is immediate.

Controlling Costs and Increasing Value for Longtime/First Time Anglers

- Establish a full 12-month annual fishing license.
- Suspend automatic cost of living adjustments (COLA) on fishing licenses.
- Consider a family pack license fee, making fishing more affordable for California families.
- Establish a low cost, junior fishing license, for those aged 16 and 17, similar to California hunting licenses.
- Ensure that recreational fishing license fees no longer subsidize the cost of regulating the California commercial fishing industry.

Reducing Regulatory Costs

- Exempt recreational anglers from fishing restrictions that were intended to address unsustainable commercial fishing practices and destructive gear.
- Eliminate fishing restrictions that have insignificant impacts on wildlife.
- Eliminate illegal fishing restrictions imposed by local governments, such as limits or bans on pier fishing and jetties.
- Oppose efforts to regulate or ban common fishing gear that have an insignificant impact on wildlife, but could substantially increase the cost of equipment or require impractical substitute gear.

The California Sportfishing League is pleased to have shared these findings with California's fishing community and policymakers, and remains committed to working with them to ensure a strong future for recreational fishing in California.

PROUDLY SUPPORTED BY:

SOURCES

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6. See Fishing License Data by State, Attached
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22. California Fish and Game Code Section 711 http://www.leginfo.ca.gov/cgi-bin/displaycode?section=fgc&group=00001-01000&file=700-715
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33. 2011 NOAA Pacific Fisheries Economic Report https://www.dropbox.com/s/w2fzadihlmsofnx/2011 NOAA Fisheries Economic Report.pdf?dl=0
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35. Recreational Boating and Fishing Foundation: "Engaging the Hispanic Audience: Insights to Actions" http://takemefishing.org/uploadedFiles/Content/General/About_RBFF/Research_and_Evaluations/RBFF%20Hispanic%20Presentation.pdf
36. California Lodging Industry Association http://www.clia.org/

FISHING LICENSE DATA BY STATE

State	2011 Participation Rate	2011 U.S. Ranking	Resident Adult Cost	Annual vs. Calendar
Alabama	14%	30	Fresh $12.85/Salt 22.60	Calendar/expires Aug 31
Alaska	41%	1	$25.00	Calendar/expires Dec 31
Arizona*	11%	40	$37.00	12 months
Arkansas*	21%	10	$10.50	12 months
California	6%	49	$47.01	Calendar/expires Dec 31
Colorado*	17%	19	$36.00	Calendar/expires Mar 31
Connecticut	13%	33	$32.00	Calendar/expires Dec 31
Delaware	13%	33	$8.50	Calendar/expires Dec 31
Florida	14%	30	Fresh $17.00/Salt $17.00	12 months
Georgia	11%	40	$9.00	12 months
Hawaii	11%	40	Free	No licenses required
Idaho*	24%	8	$25.75	Calendar/expires Dec 31
Illinois*	13%	33	$15.00	March of following year
Indiana*	15%	27	$17.00	Calendar/expires Mar 31
Iowa*	22%	9	$19.00	Calendar/expires Dec 15
Kansas*	20%	13	$20.50	Calendar/expires Dec 31
Kentucky*	15%	27	$20.00	Calendar/expires Feb 28
Louisiana	21%	10	$9.50	Calendar/expires Jun 30
Maine	19%	15	$25.00	Calendar/expires Dec 31
Maryland	10%	44	Fresh $20.50/Salt $15	Calendar/expires Dec 31
Massachusetts	8%	47	Fresh $27.50/Salt $10	Calendar/expires Dec 31
Michigan*	18%	17	$26.00	Calendar/expires Mar 31
Minnesota*	32%	2	$22.00	Calendar/expires Feb 28
Mississippi	27%	3	Fresh $32/Salt $10	12 months
Missouri*	19%	15	$12.00	Calendar/expires Feb 28
Montana*	25%	7	$26.00	Calendar/expires Feb 28
Nebraska*	14%	30	$28.50	Calendar/expires Dec 31
Nevada*	8%	47	$29.00	Calendar/expires Feb 28
New Hampshire	16%	25	Fresh $35/Salt $11	Calendar/expires Dec 31
New Jersey	10%	44	$22.50	Calendar/expires Dec 31
New Mexico*	15%	27	$25.00	Calendar/expires Mar 31
New York	12%	38	$25.00	12 months
North Carolina	18%	17	Fresh $20/Salt $15	12 months
North Dakota*	N/A	N/A	$17.00	Calendar/expires Mar 31
Ohio*	16%	25	$19.00	Calendar/expires Feb 28

State	2011 Participation Rate	2011 U.S. Ranking	Resident Adult Cost	Annual vs. Calendar
Oklahoma*	26%	5	$25.00	Calendar/expires Dec 31 OR June 30
Oregon	13%	33	$33.00	Calendar/expires Dec 31
Pennsylvania*	10%	44	$21.70	Calendar/expires Dec 31
Rhode Island	11%	40	$18.00	Calendar/expires Feb 28
South Carolina	17%	19	Fresh $30/Salt $10	12 months[a]
South Dakota*	26%	5	$30.00	Calendar/expires Jan 31
Tennessee*	17%	19	$28.00	Calendar/expires Feb 28
Texas	13%	33	$40.00	12 months
Utah*	17%	19	$34.00	12 months
Vermont*	20%	13	$25.00	Calendar/expires Dec 31
Virginia	12%	38	$44.50	12 months
Washington	17%	19	$54.25[b]	Calendar/expires Mar 31
West Virginia*	17%	19	$19.00	Calendar/expires Dec 31
Wisconsin*	21%	10	$20.00	Calendar/expires Mar 31
Wyoming*	27%	3	$24.00	Calendar/expires Dec 31

* Inland State

a. Changed from calendar year to 12-month license in 2015

b. WA also offers separate fresh and saltwater licenses for $29.50 and $30.05, respectively.

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2015 APR 30 PM 5:03

MLS

[redacted]

April 28, 2015

The Honorable Jerry Brown, Governor
State of California
State Capitol, First Floor
Sacramento, CA 95814

Re: Political and Non Scientific Agenda of the Governor & DFGC & Management of Resources.
Re! Commission of Fish & Game Copy

Dear Jerry Brown, Governor:

I know that I am in violation of state policy, as a Hunter Education Instructor, by complaining about you, the California Department of Fish & Game Commission (DFGC) and Department of Fish and Wildlife (DFW). However, I am very upset and tired of the DFGC & the DFW catering to the Anti-Hunting Groups, the non-consumptive user and the other restrictive users of our Renewable Natural Resources. The DFGC is ignoring its mandated role in "Proper" Wildlife Management when having discussions and establishing regulations restricting, controlling or removing Hunters & Fisherman from the management plan. Hunters are the first true conservationists and are an integral part of Proper Wildlife Management. Their removal from the equation hobbles Wildlife Management Plans and Models which ultimately endangers all of California's Wildlife and Habitat.

For several years now I have been very unhappy with the Politics that drive the DFGC and its policies. Policies that are supposed to manage our natural resources. You, Governor, are ultimately responsible for maintaining all of our natural resources as mandated by our State Constitution without having a biased ideology. However, you have signed into law, legislation that is in direct contradiction to Proper Wildlife Management with no regard to research results or the lack of such research. Our State Constitution Mandates Proper Management of all Natural Resources which includes Wildlife and with that you are mandated to appoint only those individuals that meet and follow this criteria. The individuals you appoint must understand what they are responsible for and what the Mandate Goals are. If one of your appointments is not fulfilling this obligation you are obligated to reprimand or remove that person immediately. However, you are allowing individuals that are not fulfilling their obligation to remain on the DFGC and allowing them to make decisions that are not in the best interest of our state's wildlife as a whole. Examples of legislation that you signed into law bans the use of hounds for hunting bear and bobcats, bobcat trapping and of course banning all lead ammunition for hunting. You are currently allowing three commissioners, Michael Sutton, Richard Rogers, and Jack Baylis to remain on the DFGC who voice their anti-hunting agenda based solely upon their ideology and or close associations with anti-hunting groups. You are not fulfilling your responsibility as Governor to reprimand nor remove those individuals. Please review the proceedings from December 3rd, 2014 and April 9, 2015, for examples of their statements, actions and conduct.

As most of us get older we learn how reality and nature work and we get more conservative and concerned about our natural resources. Governor you and I are both close to the same age. However, we

have lived different lives. You have lived most of your adult life walking on blacktop. I, on the other hand, a dedicated outdoors person have walked in the dirt on our public lands observing wildlife and nature most of my life. You have been somewhat insulated from our wildlife and its required management. As an outdoors family of 8 (my wife, 6 children & dog) our non working time has always been in our National Forests enjoying nature giving me an intimate relationship with it and what is happening to our wildlife and the habitat. A 60 year old Natural Resource Biologist once told me that he learned more about wildlife in one day while bowhunting from a treestand than he did in four years of college. Learning is what I have been doing all of my life. I am currently seeing the negative effects on our wildlife populations caused by the "politically correct politics" that are dictating our wildlife management programs which is destroying Scientifically Based Wildlife Management Plans. It's all about being there and being involved.

I want you to understand why I am writing this letter to you. I am a lifelong dedicated volunteer and outdoorsman and a concerned citizen. I am not just some local yokel who likes complaining about things. I am and have been an involved contributor to society. Here is a short summery of what I have contributed. I purchased my first California Hunting license in 1954. I have been teaching conservation through wildlife management since 1977, when archery first became a part of California's Hunter Education Program. My wife, Joan, and I have donated more than 25 years to teaching archery to the physically challenged and have been instructing the "Becoming an Outdoor Woman" archery and bowhunting classes for 20 years. I have been instructing "National Bowhunter Education Foundation" classes since 1976, and I served as California's Volunteer Chairman for eleven years. Joan and I have received many awards for promoting all aspects of archery, hunting and conservation. The California Bowman Hunters and State Archery Association have awarded us many of those awards. I also have received awards from California's Hunter Education Program for my many years of teaching. Additionally, for many years prior to my retirement, a 55 year career as an electrician and member of the IBEW in Sacramento, working and serving as an elected officer of the Electricians Local 340 several of those years.

Governor, it appears that you, our many legislators and your appointed committee members seem to be only concerned with being politically correct. We are seeing that our elected officials are only listening to the "uninformed" and "misinformed" squeaky wheels who think the only way to manage our natural resources is to remove all "positive" human influences. This include enhancing habitat and managing individual wildlife species populations so that all species can thrive for generations to come. Decision makers for our Natural Resource management who have no hands on experience with nature and wildlife appear to have no idea how to manage real wildlife or they are intentionally allowing their ideologies or anti-hunting groups to influence their decisions. Governor, I believe you, our legislators and managers have no idea where you are taking our Renewable Natural Resource and the future of our wildlife and that disturbs me greatly.

The decisions by the DFGC and bills being passed by our legislators and signed into law by you are in direct conflict with what is taught in every DFW Hunter Education Class for proper management of our renewable natural resources. Wildlife management through hunting, trapping and fishing are past proven methods and supported by DFW's Mission Statement. I suggest you ask the following questions of DFGC and DFW. Is California's predator management working? Is wildlife depredation requests increasing or decreasing? How is the wild pig being managed? What is being done to enhance deer populations and decrease coyote, mountain lion and bear (not to mention wolves in our future) predation on adults and fawns? How are we managing bear populations now that the Houndsmen have been eliminated from bear management? Is the increase in our bear population a concern of yours? What is

being done to enhance pheasant hunting other than Licensed Bird Clubs? Why isn't the blood tests of condors for lead content indicating a decrease in content? Why is the lead content in their blood remaining at the same levels or increasing while there is no hunter lead for them to consume in the Condor area? How are the wildlife species populations being managed in State Parks? Do all of these programs make money and improve our Natural Resources in California, or are they not meeting Resource Goals.

I would suggest that you one day in the near future attend a California Hunter Education Class which is taught by one of your very dedicated Volunteer Instructors who get nothing for teaching hundreds of students each year. Their only reward is to have their students purchase a hunting license and head afield. Then experience first hand the thrill of having their wildlife quarry within a few feet of them and are successful in harvesting that specie, field dress it, care for and enjoy wild game meat. As an added bonus they experiences and witness nature each day in the wild, making them a true sportsperson, conservationist and manager of our wildlife for generations to come. What we attempt to do in our California Hunters Education Classes is to teach wildlife and Resources Management based upon Hunter Education Materials. However, in reality our Wildlife and Resources are not being managed properly because of our Government's nonscientific and politically correct attitude and decision making over the past several years.

In recent years I have noticed that DFW field staff are retiring as soon as they reach the minimum retirement age. These individuals are not leaving because they don't like working with wildlife and sportspeople but because they are sick and tired of having to deal with the Politically Correct laws and decisions made by the DFGC and Legislators that is in direct conflict with their mandated responsibilities and goals. These retired employees are dedicated wildlife managers and many are giving of themselves to non-profit conservation organizations like I do daily with Hunter Ed and Archery.

For many years my wife and I have been giving of ourselves doing whatever we can for conservation and the future of wildlife management. We enjoy teaching women, youth and the disabled individuals the sport of archery and bowhunting. However, I'm not sure how long our Historic Hunting Heritage will last under the current anti-hunting and politically correct direction of the Governor and the DFGC.

Sincerely & God Bless;

Joe Becker

Joe Becker,

cc: CA.DFGC, CA.H.Ed. & CBHSAA

United States Department of the Interior

BUREAU OF INDIAN AFFAIRS
Northern California Agency
1900 Churn Creek Road, Suite 300
Redding, California 96002-0292

RECEIVED
CALIFORNIA
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COMMISSION
2012 AUG 20 PM 2:38

TAKE PRIDE IN AMERICA

MLS

IN REPLY REFER TO:

Executive Direction

AUG 15 2012

Sonke Mastrup, Executive Director
California Fish and Game Commission
PO Box 944209
Sacramento, CA 94244-2090

Dear Mr. Mastrup:

At the request of the Resighini Rancheria, this correspondence is in support of the Tribe's position that the Resighini Rancheria should be identified as eligible for "tribal take" as defined in the California Marine Life Protection Act, Marine Protected Areas.

Resighini Rancheria is a Federally Recognized Tribe comprised of Yurok people, and is aboriginal to the area within the North Coast Study Area. Further, the Resighini Rancheria has been listed on the Department of Interior, Bureau of Indian Affairs, list of Indian Entities Recognized to Receive Services From the Bureau of Indian Affairs, published annually in the Federal Register, since its inception. The original list, Federal Register, Vol. 44, No. 26 – Tuesday, February 6, 1979, Indian Tribal Entities that Have a Government-to-Government Relationship with the United States, lists the Resighini Rancheria as Resighini Rancheria, Coast Indian Community of Yurok Indians, California.

The Northern California Agency is unaware of any Federal Law that grants any state agency the authority to exclude the Resighini Rancheria under the current circumstances.

If there is a question, please contact me, at (530) 246-5141, Ext. 31, or you may write to the above address.

Sincerely,

Dr. Virgil Akins
Superintendent

PALA TRIBAL HISTORIC PRESERVATION OFFICE

PMB 50, 35008 Pala Temecula Road
Pala, CA 92059
760-891-3510 Office | 760-742-3189 Fax

PALA THPO

March 13, 2013

California Fish and Game Commission
PO Box 944209
Sacramento, CA.,
94224-2090

To Whom It May Concern:

The Pala Band of Mission Indians is a federally recognized tribe with members who trace their descent to two bands, the Luiseño and Cupeño. Both of these bands have a documented ethnographic history of using marine resources. They would travel seasonally along the San Luis Rey River to the Pacific to procure fish and conduct subsistence activities.

Sincerely,

Shasta C. Gaughen, PhD
Tribal Historic Preservation Officer

Smith River Rancheria

140 Rowdy Creek Rd, Smith River, CA 95567-9525
Ph: (707) 487-9255 Fax: (707) 487-0930

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Chairperson

Denise Padgette
Vice Chairperson

Loren Bommelyn
Council Secretary

Joel Bravo
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Marian Lopez
Council Member

Dr. Joseph Giovannetti
Council Member

Lenora Hall
Council Member

Russ Crabtree
Tribal Administrator

March 21, 2012

California Department of Fish and Game
c/o Horizon Water and Environment
P.O. Box 2727
Oakland, CA 94602

Re: MLPA North Coast CEQA Comments

Dear Horizon:

The Smith River Rancheria has a long tradition of gathering and harvesting marine resources for cultural and religious purposes and for subsistence. We have always emphasized that Smith River Rancheria inherited and still today possess strong values about the stewardship and conservation of marine resources. The Tolowa Dee-ni' (people) have a strong held belief that they have an ongoing responsibility to be the stewards of their ancestral lands. The use of traditional cultural knowledge empowered tribes to thrive for thousands of years. It is a tribal practice to take only those resources needed in the spirit of respect and reciprocity.

Pyramid Point and Prince Island proposed boundary is a California Coastal National Monument and the jurisdiction is under the Smith River Rancheria Tribal Government. The question of the waters and marine resources has never been fully vetted throughout this MPA process. Rather it has been discarded as one of those unanswered questions to be avoided and continues to be not addressed. Again, in the draft EIR we do not see adequate reference made to this question.

The Smith River Rancheria's position is they have full jurisdiction over Prince Island and the surrounding seascape. As stated in the Smith River Rancheria Factual Based Record, that we were given 60 days to complete. As stated in the several Tribal Factual Based Records, "there would be areas of geographical overlap identified among Tribes. Any assertion and claims made by each tribe of their respective ancestral and or aboriginal lands and waters is a matter for tribes to resolve amongst themselves. It is not something for the State to attempt to mandate for tribes". Pyramid Point and Point Saint George is a very valid case and point.

The Department of Fish and Game has placed in several public records that other tribes are authorized to practice customary uses in the ancestral lands and seascape of the Smith River Rancheria. The Smith River Rancheria could certainly make this same point in other North Coast MPA's. As we have stated numerous times, it our strong held belief that this is a question to be decided only by tribes, and should not be broached in any manner by the State of California.

The EIR should be revised to reflect this fact along with any other documents that in our view attempts to undermine the rights of tribes over their ancestral lands and water. Until an Inter-Tribal Agreement is negotiated with Smith River Rancheria and any other federally recognized tribes, it would be premature for the proposed regulations to identify any other tribes as being authorized to fish and gather within the Pyramid Point and Point Saint George proposed SMCAs.

It has been and will continue to be, the position of the Smith River Rancheria that the California Fish and Game has no authority to assert regulatory jurisdiction within the Smith River Rancheria boundaries, including the seascape surrounding Pyramid Point and Point Saint George. The Commission should adhere to the policy of avoidance adopted by the North Coast Regional Stakeholders Group and the Blue Ribbon Taskforce and not make these attempts to circumvent the traditional, historical and sovereign authority of the Smith River Rancheria.

Additional, there should be expanded discussion in the EIR on:

- The Federal nexus and compliance with the National Environment Policy Act;
- The positive impacts of co-management between federally recognized tribes and the Department of Fish and Game;
- Tribal Cultural Impacts;
- Ensure adequate Tribal Consultation and the development of a binding MOU.

Furthermore, it should be noted that the entire North Coast is effectively a traditional cultural property for tribes whom have inhabited this region for millenniums. This proposed project should ensure that it does not set the stage for impacts to the diverse and culturally important traditional tribal uses. The State of California needs tribal support and local buy-in to sustain successful implementation of the Marine Life Protection Act.

Failure to do will only result in adverse effects on the marine environment, which will be coupled with insufficient enforcement capabilities. Such protection capacity can only be provide by the tribes and the local communities.

Sincerely,

Russ Crabtree
Tribal Administrator

Attachments:
SRR, Fish and Game Commission
Cher-Ae Heights Indian Community of the Trinidad Rancheria
Yurok Tribe Correspondence

YUROK TRIBE

190 Klamath Boulevard • Post Office Box 1027 • Klamath, CA 95548
Phone: 707-482-1350 • Fax: 707-482-1377

February 14, 2012

Russ Crabtree, Tribal Administrator
Smith River Rancheria
140 Rowdy Creek Rd
Smith River, CA 95567-9525

Dear Mr. Crabtree,

It has come to our attention that there is some confusion regarding the Yurok Tribe's intentions in including Pyramid Point and Point St. George State Marine Conservation Areas (SMCAs) in the *Yurok MLPA Marine Plan Factual Record of Use* presented to the Fish and Game Commission September 15, 2011.

The Yurok Tribe in no way intended to assert authority or regulatory jurisdiction over the Pyramid Point or Point St. George State Marine Conservation Areas in our inclusion of information on those sites in our Factual Record. The inclusion of these sites was merely to acknowledge historic Yurok use under traditional, Tolowa authorized inter-Tribal use agreements and allow flexibility for formal Inter-tribal use agreements to be negotiated and authorized by the Smith River Rancheria. The Yurok Tribe respects and defers to the sovereign, federally recognized authority of the Smith River Rancheria to manage use at Pyramid Point and Point St. George State Marine Conservation areas.

As we have discussed throughout the MLPA process it is imperative for us to reach agreement between Tribes regarding traditionally shared or permitted use areas without the State of California's influence or dictation.

The Yurok Tribe appreciates the good working relationship we have with Smith River Rancheria and hopes to continue to work together in order to protect our inalienable sovereign right to traditionally fishing and gathering for generations to come.

Sincerely,

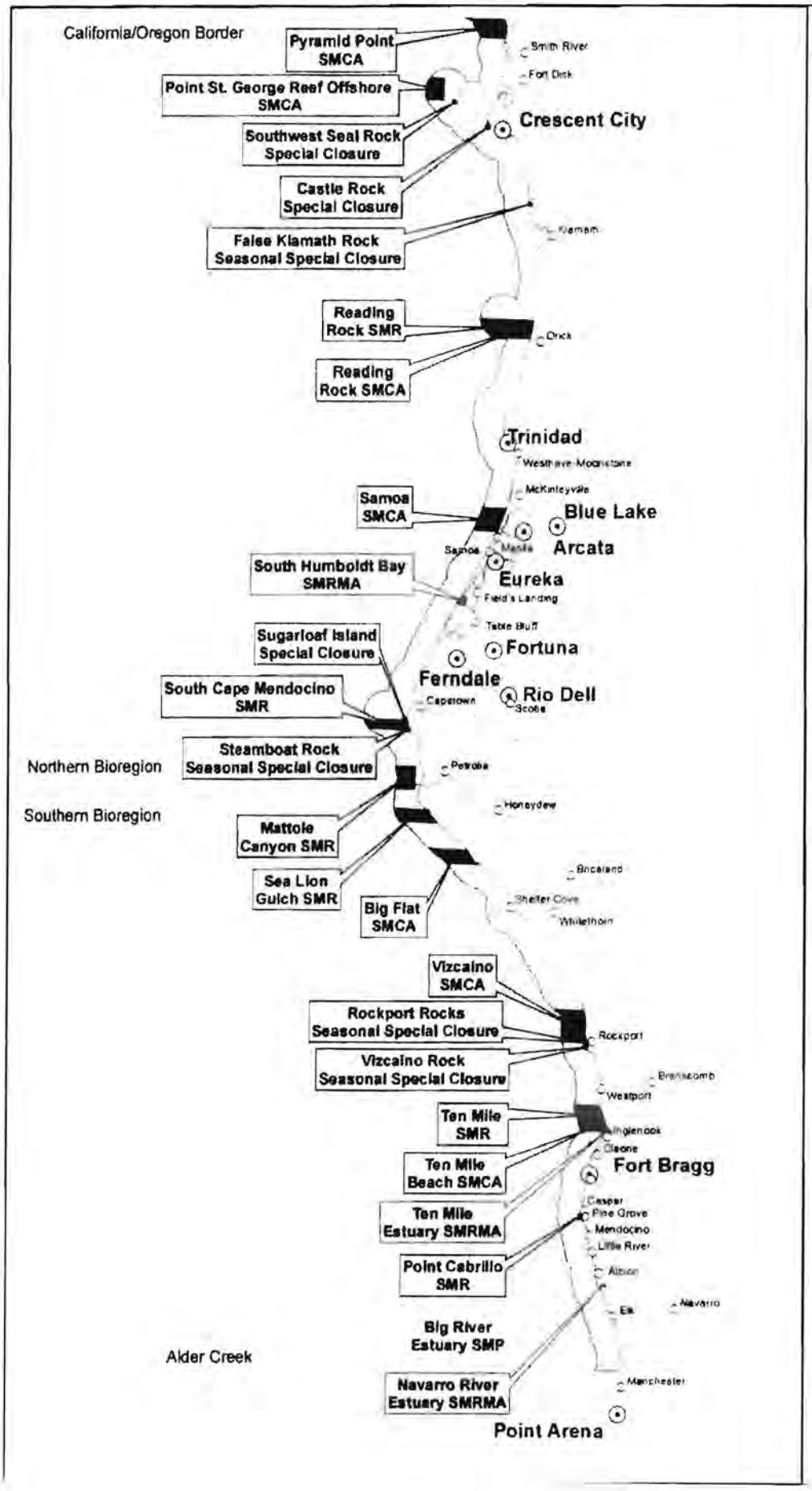
2-14-12

Thomas O'Rourke
Chairman Yurok Tribe

CC: Sonke Mastrup, Director Fish and Game Commission

MLPA North Coast Study Region — Overview Map

Round 3 MLPA North Coast Regional Stakeholder Group MPA Proposal:



California Marine Life Protection Act (MLPA) Initiative

Legend

- Proposed State Marine Conservation Area (SMCA)
- Proposed State Marine Park (SMP)
- Proposed State Marine Reserve (SMR)
- Proposed State Marine Recreational Management Area (SMRMA)
- Proposed Special Closure *See additional maps and materials.*
- North Coast Study Region Boundary

N

0 5 10 20 Nautical Miles

0 5 10 20 Miles

0 10 20 Kilometers

Created by Marine Map Cartographic Division, UCSB

Date: 22 September 2010

For more information, visit : http://www.northcoast.marinemap.org

Disclaimer

This map represents the Round 3 marine protected area (MPA) proposal developed by the MLPA North Coast Regional Stakeholder Group (NCRSG) for consideration by the MLPA Blue Ribbon Task Force. The NCRSG also developed a list of proposed special closures; the special closures are a separate recommendation from the Round 3 NCRSG MPA Proposal, but are displayed on this map for reference. The Round 3 NCRSG MPA Proposal is under review; it is not a recommendation to the California Fish and Game Commission.

Cher-Ae Heights Indian Community of the Trinidad Rancheria

November 28, 2011

Russ Crabtree, Tribal Administrator
Smith River Rancheria
140 Rowdy Creek Road
Smith River, CA 95567

Mr. Crabtree,

It has come to my attention that there is some concern regarding the content of the factual record the Trinidad Rancheria submitted to the Department of Fish and Game concerning the proposed Marine Conservation Areas within the North Coast Region, specifically in relation to Point St. George and Pyramid Point.

The Trinidad Rancheria in no way intended to indicate that it asserts any authority or jurisdiction over Tolowa ancestral territory and respectfully apologizes for any misunderstanding pertaining to our factual record. The Trinidad Rancheria included the map, "Fig 4. Proposed Marine Protected Areas (MPAs) within Yurok Ancestral Territory and Traditional Fishing Grounds", to illustrate the Proposed Marine Protected Areas within the North Coast Study Region. We in no way intended this map to illustrate cultural jurisdiction over the area or to imply that Trinidad Rancheria members would have fishing and gathering rights at Pyramid Point and Point St. George without explicit authorization from the Smith River Rancheria.

The authority to regulate gathering at traditional places within Tolowa ancestral territory naturally rests with the Smith River Rancheria. The Trinidad Rancheria does not claim Pyramid Point or Point St. George to fall within Yurok ancestral territory and want to ensure that the Department of Fish and Game Regulations are clear regarding fishing and gather at these locations. If in fact, the situation arises where inter-tribal use agreements are created and negotiated on a government to government basis, between our two sovereign nations, it will be with the absolute acknowledgement of the Smith River Rancheria's right of jurisdiction over its ancestral territory.

www.trinidadrancheria.com
1 Cher-Ae Lane • PO Box 630 • Trinidad, California • 95570 • 707.677.0211 • 707.677.3921 (fax)

The Trinidad Rancheria is confident that we will be able to create inter-tribal agreements to address individual fishing and gathering rights within the proposed MPA's and recognize that fishing and gathering within the ancestral territory of the Tolowa Dee-ni' will only occur with the permission of the Smith River Rancheria. It was never our intention to insinuate otherwise, nor would we attempt to circumvent the sovereign rights of the Smith River Rancheria.

I hope that this clarifies the Trinidad Rancheria's position regarding Pyramid Point and Point St. George. Please accept my sincere apologies for any confusion that has occurred.

Thank You,

Jacque Hostler

Jacque Hostler
Chief Executive Officer
Trinidad Rancheria

CC: Anna Kimber, Attorney
Law Office of Anna Kimber

Sonke Mastrup, Executive Director
Fish and Game Commission

Smith River Rancheria

140 Rowdy Creek Rd, Smith River, CA 95567-9525
Ph: (707) 487-9255 Fax: (707) 487-0930

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Chairperson

Denise Padgette
Vice Chairperson

Loren Bommelyn
Council Secretary

Joel Bravo
Treasurer

Marian Lopez
Council Member

Dr. Joseph
Giovannetti
Council Member

Lenora Hall
Council Member

Russ Crabtree
Tribal
Administrator

November 30, 2011

Mr. Sonke Mastrup, Director
California Fish & Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814
SMastrup@fgc.ca.gov

RE: Addressing State Marine Conservation Areas Pyramid Point and Point St. George

Dear Mr. Mastrup:

I am following up on our earlier conversation regarding the concerns of the Smith River Rancheria with respect to the proposed regulations addressing the State Marine Conservation Areas Pyramid Point and Point St. George.

In the September 27, 2011 report to the Fish & Game Commission, both the Cher-Ae Heights Indian Community of the Trinidad Rancheria and the Yurok Tribe were identified as being authorized to take marine resources within both Pyramid Point and Point St. George. This report is contrary to the factual record submitted by both Tribes, which included a map, which clearly indicated both these SMCAs fall within the aboriginal and ancestral territory of the Tolowa people.

Although there may be individuals of Yurok descent who have fished and gathered within the ancestral territories of the Tolowa people, those practices have occurred pursuant to the authorization of the Smith River Rancheria, the federally recognized Tribe that has exerted jurisdiction over individuals within these areas since time immemorial. The factual record submitted by both Trinidad Rancheria and the Yurok Tribe made it clear that any individual's right to fish and gather within those MPAs would be conducted pursuant to an "inter-tribal use agreement;" an agreement which has not been negotiated.

Until such an agreement is negotiated between the Smith River Rancheria and any other federally recognized tribe, it would be premature for the proposed regulations to identify any other tribe as being authorized to fish and gather within the Pyramid Point and Point St. George proposed SMCAs.

When this issue was brought to the attention of the Cher-Ae Heights Indian Community of the Trinidad Rancheria, they were quick to correct the record by sending a letter to me, a copy of which is enclosed.

Any individual tribal member's fishing and gathering activities within these MPAs can only occur with the permission of the Smith River Rancheria. Until such time as an inter-tribal use agreement can be negotiated between the Smith River Rancheria and other federally recognized tribes, the regulations prepared by the Department of Fish & Game must be corrected to reflect the factual record: that the Pyramid Point and Point St. George SMCAs are not within their ancestral territory of the Cher-Ae Heights Indian Community of the Trinidad Rancheria and the Yurok Tribe, but instead fall within the territory of the Tolowa Dee-ni of the Smith River Rancheria.

Please feel free to call if you have any questions.

Sincerely,

Russ Crabtree
Tribal Administrator
Smith River Rancheria

Enclosure

cc: Becky Ota
California Department of Fish & Game

SHERWOOD VALLEY RANCHERIA

June 27, 2011

Jim Kellogg, President
California Fish and Game Commission
PO Box 944209
Sacramento CA 94244-2090

Re: Tribal Use Options for MPAs in North Coast Study Region

Dear Mr. Kellogg:

Sherwood Valley Rancheria strongly supports the Tribal Use Option 1 concept for Tribal use of North Coast MPAs. We believe this will provide the highest level of protection for Tribal traditional, non-commercial use of marine resources, and because it also provides protection for the ocean environment. We urge the Fish and Game Commission to adopt the Tribal Use Option 1 concept as the preferred alternative for the purpose of the CEQA review and subsequent development of regulations that will authorize a special category of Tribal use.

Option 1 will allow for continued Tribal gathering in the proposed MPAs and it appropriately distinguishes between Tribal uses and public recreational uses. We believe Option 1 provides the highest level of protection for the proposed MPAs. Of the three possible options the State has developed, Option 1 most closely follows the recommendations of the Tribes, the Regional Stakeholder Group, the Blue Ribbon Task Force, and the many other participants in the MLPA Initiative process in regard to ensuring the continuation of Tribal uses, as well as the long term conservation and recovery of critical marine species and habitats.

We hereby request the Commission to apply the Tribal Use Option 1 concept throughout the MPA network, so that it is applicable not only to all State Marine Conservation Areas (SMCAs), but also to all State Marine Recreational Management Areas (SMRMAs) because SMRMAs are located in cultural use areas for Tribes of the North Coast.

Thank you to the Commission for your work to ensure protection for the ocean and the Tribes' traditional cultural use of ocean resources.

Sincerely,

Michael Fitzgerral
Tribal Chairman

Cc: Secretary John Laird, California Natural Resources Agency
Chairwoman Priscilla Hunter, Inter Tribal Sinkyone Wilderness Council

190 Sherwood Hill Drive • Willits, California 95490
(707) 459-9690 • Fax (707) 459-6936

Cher-Ae Heights Indian Community of the Trinidad Rancheria

August 14, 2013

Sonke Mastrup
Executive Director
CA Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Director Mastrup:

On behalf of the Cher-Ae Heights Indian Community of the Trinidad Rancheria, please accept this letter to clarify an error made in the August 9, 2013 Trinidad Rancheria letter to you requesting formal Government to Government Consultation with the CA Fish and Game Commission. I inadvertently noted Trinidad Rancheria CEO Jacque Hostler-Carmesin as the point of contact for the Trinidad Rancheria in regards to this consultation request. As Mrs. Hostler-Carmesin was recently appointed to serve on the CA Fish and Game Commission, she has requested recusal from any interactions between the Tribe and the Commission in order to avoid any potential conflict of interest due to her due positions.

Please contact Trinidad Rancheria Executive Manager Amy Atkins at (707) 677-0211 ext. 2702 or Tribal Historic Preservation Officer Rachel Sundberg at (707) 677-0211 ext. 2726 to plan and coordinate meeting dates and times for a Government to Government Consultation of Reading Rock as originally requested in the August 9, 2013 letter.

Sincerely,

Garth Sundberg
Tribal Chairman
Trinidad Rancheria

May 5, 2009

SCRSG Members; MLPA Blue Ribbon Task Force Members; Scientific Advisory Team;
California Department of Fish and Game
MLPA Initiative
1416 9th Street, Room 1311
Sacramento, CA 95814

Re: Chumash MPA Co-Management Proposal - Sequit SMCA MPA with a Moderate High Protection Level

Dear SCRSG Members, MLPA Blue Ribbon Task Force Members, Scientific Advisory Team, and the California Department of Fish and Game staff:

Below is Wishtoyo Foundation's revised proposal for a Chumash Co-Managed MPA (Sequit MPA) from Leo Carrillo State Beach to Zuma Beach (Trancas) in Malibu, California. Wishtoyo's proposal has evolved following Wishtoyo's and its Ventura Coastkeeper program's: 1.) April 9, 2009 Comment Letter; 2.) April 28, 2009 public comment at the SCRSG MLPA meeting; 3.) work with and feedback from the SCRSG workgroups on April 29, 2009; 4.) The hosting of and Chumash co-management presentation to SCRSG members, MLPA Initiative Staff, and representatives from the California Department of Fish and Game at Wishtoyo's Chumash Discovery Village on April 30, 2009.

As MPA development under the MLPA Initiative continues, Wishtoyo will continue to reach out to the Chumash community for its input through the Chumash's SCRSG representatives, through meetings and conferences at the Chumash Discovery Village and other locations, via website updates, and via email and phone communications. Additionally, Wishtoyo is in the process of establishing a work plan on how to best reach out to, share information with, and engage Chumash tribal groups. Wishtoyo also hopes that the Sequit zone that it is proposing serves a blueprint for the establishment of additional Chumash and Tribal Co-managed MPA's.

Wishtoyo also proposes that the proposed allowable activities for traditional and ceremonial utilization needs of the Chumash People included in this proposal are allowed in all SMCAs. The Wishtoyo Foundation would like to note that while the enforcement

Wishtoyo Foundation
3875-A Telegraph Road, #423 • Ventura, CA 93003
Phone 805.658.1120 • Fax 805.258.5135 • www.wishtoyo.org

services, Chumash cultural preservation services, and educational services that Wishtoyo proposes to commit to assist the DFG in implementing the proposed Sequit MPA will be provided by and from the Wishtoyo Foundation's resources, the Wishtoyo Foundation encourages other Chumash organizations, entities, and individuals to assist with and add to the implementation of the proposed Sequit Chumash co-managed MPA by offering their resources and services as well.

In regards to state policy making implications of a Chumash Co-managed MPA, Wishtoyo would like to clarify that its Chumash Co-Management proposal is not a proposal that is asking the DFG to share MPA policy making authority. Wishtoyo's co-management proposal is a proposal to preserve Chumash People's right to participate and assist with the protection and recovery of their marine environment, which they share with modern society, while allowing Chumash people to continue their traditional and ceremonial utilization needs of ocean resources in a manner that is consistent with ecological protections established via MPAs under the MLPA.

Thank you for your time and efforts to achieve the goals of the MLPA to its fullest and to help the Chumash people continue to maintain and revitalize their culture. As MPA development continues in the MLPA Initiative, we look forward to continuing our work with all stakeholders to ensure that a Chumash Co-Managed MPA is established.

Below is the Chumash Co-Management proposal for the Sequit MPA:

I. Proposed Locations for Chumash Co-Management Component (Sequit MPA)

1. Leo Carrillo State Beach to Zuma Beach in the Rincon to Point Dume Sub-region
    a. Dimensions: From the coast extending out to the 3 nautical mile offshore state waters boundary from Leo Carrillo to Zuma Beach (Trancas), which is roughly 6 linear miles of coastline.

II. The overarching impetus behind the Chumash Co-management component is

1. Preserving & protecting the ecological integrity of MPA's
    a. Preservation Rational: This region of the Los Angeles County coast is dominated by low relief reef and patchy sand, kelp forests to depths of about 50 feet, patchy eelgreass beds, rich intertidal diversity, a pronounced steep shelf near the 3-mile boundary, and distinctly different oceanographic patterns than the areas within the Santa Monica Bay. With the many streams along this stretch, this site is known as a steelhead trout barring area and the subtidal habitats support a diverse assemblage of invertebrates and fishes including lobster, white sea bass, angel sharks, giant black sea bass, as well as being known for common sightings of the Gray whale seasonal migrations and pods of dolphins.

Wishtoyo Foundation
3875-A Telegraph Road, #423 • Ventura, CA 93003
Phone 805.658.1120 • Fax 805.258.5135 • www.wishtoyo.org

2. Preserving Chumash Culture and its relationship with the ocean by allowing Chumash to continue their traditional and ceremonial utilization needs of ocean resources in a manner that is consistent with ecological protections established via MPAs under the MLPA.

3. Maintaining the Chumash People's right to participate in the protection and recovery of their marine environment, which they share with modern society.

4. Educating the general public about the Chumash's intimate relationship with and dependency on the environment, which in turn will better protect our marine resources by helping society redefine their relationship with the ocean and its resources.

III. Summary of 2 main components:

1. Implementation: Co-beneficial Partnership with the Chumash and the California Department of Fish and Game (DFG) to implement the "co-managed" MPAs
    a. The Chumash people would provide an added service that would assist the DFG in:
        i. MPA enforcement (to protect the ecological integrity according to the MPA type)
        ii. Achieving the cultural preservation goals of the MLPA
        iii. Education and Public Outreach

2. Traditional & Ceremonial Utilization needs of the Chumash people:
    b. MPA type: SMCA
    c. Protection Level: Moderate High (activities allowed include a list of traditional Chumash takes and methods of take)
    d. Activities Allowed:
        i. The MPA would allow for takes of species that have been traditionally used by Chumash People via traditional methods of take
        ii. These takes and methods of take would preserve the ecological integrity of the MPAs

IV. Component #1: Implementation

1. Outline:
    a. Co-beneficial Partnership with the Chumash and the California Department of Fish and Game to implement the "co-managed" MPAs

    b. Chumash Organizations / Entities providing the added service

Wishtoyo Foundation
3875-A Telegraph Road, #423 • Ventura, CA 93003
Phone 805.658.1120 • Fax 805.258.5135 • www.wishtoyo.org

i. Wishtoyo Foundation at the Chumash Discovery Village, a 8,000 year old Chumash Site, at Nicholas Canyon State Beach, Malibu, CA.

c. The Chumash people would help provide an added service that would assist the DFG in:

1. **MPA enforcement** (to protect the ecological integrity according to the MPA type)
   a. Wishtoyo will provide additional eyes on the water and MPA enforcement assistance from the overlook of the proposed Chumash co-managed MPA at Wishtoyo's Chumash Discovery Village, via modern power boats, and via traditional Tomols (canoes)

2. **Achieving the maritime cultural preservation goals of the MLPA**
   a. The establishment of a Chumash co-managed MPA that recognizes Chumash people's stewardship and cultural responsibility to protect the ocean ecosystems their culture depends upon, while allowing Chumash people to continue their traditional and ceremonial utilization needs of ocean resources in a manner that is consistent with ecological protections established via MPAs under the MLPA is an important component to better enable Chumash people to continue to maintain and revitalize their culture.

   b. Allowing Chumash people to assist in implementing the MPA's will better enable Chumash people to re-align and maintain their traditional relationship and utilization of ocean resources with modern society and the current ecological state of the ocean.

   c. Permitting traditional and spiritual utilization of ocean resources in MPA that align with moderate-high protection levels in SMCA's allow Chumash people to continue their commitment to maintain their cultural identity and relationship with their ancestors, and to not lose their culture.

3. **Educating the general public about the importance of protecting and preserving marine protected areas**

   a. Wishtoyo Discovery Village's interpretive MPA ecological and Chumash cultural educational center will provide a powerful educational platform to promote sustainable ocean ecosystem management and to redefine our relationship with the ocean

Wishtoyo Foundation
3875-A Telegraph Road, #423 • Ventura, CA 93003
Phone 805.658.1120 • Fax 805.258.5135 • www.wishtoyo.org

i. This center will:
   1. Be designed to educate the public about the importance of preserving the marine environment
   2. Will aim to change the way society views its relationship with the ocean by educating them about Chumash culture and the interdependent relationship Chumash people shared with the ocean. Chumash culture and traditions foster a conservation and marine protection ethic.

ii. Center Management
   1. Wishtoyo will have Chumash representatives on site 7 days a week
   2. Through programs and walk in visitors, Wishtoyo already attracts over a thousand school children and people to its discovery village to educate them about Chumash culture and the importance of preserving, protecting, and respecting our environment.

V. Component #2: Traditional & Ceremonial Utilization needs of the Chumash People for Cultural Preservation

1. Proposal Overview:

   a. MPA type: SMCA

   b. Protection Level: Moderate High

      i. The MPA would allow for takes of species that have been traditionally used by Chumash People via traditional methods of take

      ii. These takes and methods of take would preserve the ecological integrity of the MPAs

      iii. The proposed Chumash traditional and ceremonial utilization of ocean resources acknowledges and respects the current ecological condition of the ocean and as such, our proposed traditional utilizations would foster a greater level of preservation that is just as, if not, more protective of marine plants and sea creatures than afforded at the Moderate High Protection Level.

      iv. The use of ocean resources for Chumash ceremonies and traditional cultural uses that not only preserves Chumash culture and maintain

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Chumash people's connection with their lifeways, but that also, by the manner in which these ocean resources will be used, cherished, and respected, will promote societal conservation of our ocean resources.

c. Moderate – High Protection Level with Chumash Cultural Protection

i. <u>Current Proposed Activities Allowed (Take of all living marine resources is prohibited except):</u>

1. (high) Coastal pelagic finfish, bonito, and market squid (pelagic seine, dip-net, crowder); jumbo squid (squid jigs); swordfish (harpoon); **In water depth > 50m:** pelagic finfish, bonito and white seabass (H&L; spear at any depth)

2. (moderate high) Catch and release in <10m water or using surface gear (H&L single barbless hooks and artificial lures only); pier-based fishing (H&L, hoop-net); halibut (spear); **In water depth 30<50m <u>on mainland</u>:** pelagic finfish, bonito and white seabass (H&L)

ii. <u>Proposed Chumash Activities Allowed (methods of take), also allowed for the general public (in all SMCA's)</u>[1]

1. The take of all living marine resources is prohibited except as provided for in V.1.c.i. above and in this section.

2. Additionally, we propose the traditional Chumash <u>methods of take</u> listed in this section to be <u>allowed for the marine resources and species listed above</u>, except for market squid and jumbo squid.

3. Traps:
   a. <u>Requirement</u>: Traps must be made of woven sticks of plants such as mulefat (Baccharis glutinosa), sometimes in combination with netting
   b. Types:
      i. <u>Weir Trap</u>: a conical device into which freshwater fish were skillfully driven using a team strategy

4. Nets:
   a. <u>Requirement</u>: must be made from 2 or 3 ply net cordage, several kinds of fibers can be used according to preference and availability: tok or dogbane (Apocinum cannabinum), yucca

[1] Where specific types of species being taken under a Chumash Traditional "activities" are not listed, only the type of species listed under the current proposed activities allowed under "moderate – high" protection level are allowed to be taken (see V.1.).c.i.1-2).

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(Yucca whipplii), nettle (Urtica dioeca), and surf grass (Phyllospadix spp.)

b. Types of allowed nets & methods of netting
   i. Seine Net: is a long, weighted net that hangs vertically in the water to encircle and trap schools of ocean fish. The top edge will be kept afloat with wooden floats, while the whole will be pulled along by tomols (Chumash canoe).
   ii. Dip Net: a small bag-like net baited with ground-up cactus leaves and hand-cast to snare sardines and other small fish
   iii. Drag Net: a tubular small-mesh net used to catch bonita, dragged on a long line from the stern of a tomol

5. **Fish Spear (ti'wo'y):**
   a. Materials: shaft will be made from toyon (Heteomeles arbutifolia) with a bone point fixed with asphaltum into a hole at the end.

6. **Harpoon / Spear fishing:**
   a. Harpoon Regulations
      i. Will be made with a fletched cane shaft and a detachable foreshaft with barbed point and retrieval line.
      ii. Must be shot from the prow of a tomol

   b. Composite Spear
      i. Is a 8-9 foot long harpoon used for taking species in accordance with moderate high protection. The shaft would be 4 inches in diameter and made of ironwood or holly. Styles of points for the harpoon could be barbed, composite bone or stone, or a toggle point. The retrieval line will be made from horsenettle or from tok, ¼ inch diameter and anywhere from 240 to 350 feet in length. A shallow basket will be kept in the tomol for the coiled harpoon line; the basket exterior may have been coated with asphaltum for protection from wear and water.

7. **Hook and Line Fishing**:
   a. Allowed for: surf fishing, kelp fishing, and trolling in tomols powered by oars
   b. Line Regulations: Lines for this method of fishing will be as long as 160 feet and will be made from the same variety of plant fibers listed above for nets, with "tok" or dogbane being preferred by many because it shrinks when wet, thus becoming harder and tougher in the water.

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c. Hook Regulations & Materials:
   i. The circular hook will be somewhat J-shaped and will be made from a single piece of bone or hard shell such as abalone, mussel, or clam.
   ii. The V-shaped composite hooks will be made from two pointed pieces of shell, wood or bone bound together at one end to form an acute angle.
   iii. Custom hooks will be made from bones and shells designed for the swallowing behaviors of specific kinds of fish.

d. Chumash Submerged Sacred and Cultural Site Protection

i. The SMCA protection level of Moderate High will include a prohibition of bottom trawling and similar activities that could destroy or disturbed sacred submerged Chumash cultural sites and villages.

ii. The SMCA protection level of Moderate High will prohibit divers from disturbing submerged Chumash cultural sites and villages.

VI. MLPA Policy Justifications:

1. A Tribal Co-Management Component will help best achieve the MLPA goals for seven reasons:

   i. It protects an ecological important Marine Habitat;

   ii. It provides for sound management and enforcement of the SMCA;

   iii. It provides a powerful educational platform to promote sustainable ocean ecosystem and fisheries management and to redefine our relationship with the ocean;

   iv. It protects and preserves Chumash maritime culture and traditional connection with the ocean and its resources in accordance with the mandates of the MLPA regarding cultural preservation;

   v. It best protects submerged cultural and sacred resources and archeological sites;

   vi. It satisfies nine “Design Considerations” approved by the MLPA Blue Ribbon Task Force that will be difficult to achieve without its inclusion, including ;
      1. siting MPAs adjacent to "eyes on the water" to facilitate management, enforcement, monitoring, education and outreach

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2. siting MPAs to facilitate use of volunteers to assist in monitoring and management
3. designing MPA boundaries that facilitate ease of public recognition and ease of enforcement;
4. preserving the diversity of cultural uses;
5. ensuring some MPAs include areas of educational and cultural use.

vii. It facilitates all of the "Implementation and Management Activities" to be included in regional MPA plans as set forth and approved by the MLPA Blue Ribbon Task Force.

VII. **Other Considerations:** With the multitude of adjacent state parks, state beaches, and county beaches at Leo Carrillo, Nicholas Canyon, El Pescador, La Piedra, El Matador and Robert H. Meyer Memorial, as well as being an ASBS and sites of on-going CRANE study, this part of the coast offers a wide range of opportunities for public access, shore –based recreation, consumptive recreation (including shore-based fishing, kayak fishing, and spear fishing), education and research.

Thank you again for your time and effort to achieve the goals of the MLPA to its fullest and to help the Chumash people continue to maintain and revitalize their culture. As MPA development continues in the MLPA Initiative we look forward to continuing our work with all stakeholders to ensure that a Chumash co-managed MPA is established

Please contact us to collaborate further, or with any questions or comments.

Warmest Regards,

Mati Waiya
Executive Director
Wishtoyo Foundation/Ventura Coastkeeper
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Associate Director & Staff Attorney
Ventura Coastkeeper
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Jim Kellogg, Vice President
Discovery Bay
Richard Rogers, Member
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Michael Sutton, Member
Monterey
Jacque Hostler-Carmesin, Member
McKinleyville

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Wildlife Heritage and Conservation
Since 1870

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
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(916) 653-5040 Fax
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TRIBAL COMMITTEE

Committee Co-Chairs: Commissioner Sutton and Commissioner Hostler-Carmesin

Meeting Agenda
June 9, 2015, 3:00 p.m.

Mountainside Conference Center
1 Minaret Road, Mammoth Lakes

NOTE: Please see important information about public comment deadlines and Committee procedures at the end of the agenda; the comment deadline is 5:00 p.m. on June 3, 2015. All agenda items are informational and/or discussion only. The Committee develops recommendations to the Commission but does not have authority to make policy or regulatory decisions on behalf of the Commission.

1. Public forum

2. Discuss tribal hunting, fishing and gathering opportunities off trust lands: Current practices, unfulfilled needs, and lessons learned

3. Discuss creating annual regulation training and planning event associated with Native American Day

4. Discuss issues affecting tribes needing legislative resolution – protecting confidential information and co-management

FISH AND GAME COMMISSION
2015 MEETING SCHEDULE
www.fgc.ca.gov

MEETING DATE	COMMISSION MEETING	COMMITTEE MEETING
June 10-11	Mountainside Conference Center 1 Minaret Road Mammoth Lakes, CA 93456	
July 8		**Marine Resources** Trinidad Town Hall 409 Trinity Street Trinidad, CA 95570
August 4-5	River Lodge Conference Center 1800 Riverwalk Drive Fortuna, CA 95540	
September 9		**Wildlife Resources** Department of Industrial Relations 2550 Mariposa Mall, Room 1036 Fresno, CA 93721
October 6		**Tribal Committee** Embassy Suites – LAX North 9801 Airport Boulevard Los Angeles, CA 90045
October 7-8	Embassy Suites – LAX North 9801 Airport Boulevard Los Angeles, CA 90045	
November 4		**Marine Resources** Four Points by Sheraton Ventura Harbor Resort 1050 Schooner Drive Ventura, CA 93001
December 9-10	Town and Country Resort & Convention Center 500 Hotel Circle North San Diego, CA 92108	

OTHER MEETINGS OF INTEREST

Pacific Fishery Management Council

- June 12-17, Spokane, WA
- September 11-16, Sacramento, CA
- November 14-19, Garden Grove, CA

Wildlife Conservation Board

- September 3, Sacramento, CA
- November 19, Sacramento, CA

Western Association of Fish and Wildlife Agencies

- July 16-22, Reno, NV

Pacific Flyway Council

- July 24, Reno, NV

IMPORTANT COMMITTEE MEETING PROCEDURES INFORMATION

PERSONS WITH DISABILITIES

These facilities are accessible to persons with disabilities.

1. To request reasonable accommodations for a disability, please contact the California Fish and Game Commission at (916) 653-4899 as soon as possible and no later than five (5) business days prior to the meeting.
2. For persons with a hearing or speech disability, please contact the California Relay Service as soon as possible and no later than five (5) business days prior to the meeting at 1-800-735-2929 (TTY) or 1-800-735-2922 (voice) and request your message be relayed to the California Fish and Game Commission.
3. If a request for an accommodation has been submitted but due to circumstances is no longer needed, please contact the California Fish and Game Commission at (916) 653-4899.

SUBMITTING WRITTEN MATERIALS

The public is encouraged to attend Committee meetings and engage in the discussion about items on the agenda; the public is also welcome to comment on agenda items in writing. You may submit your written comments by one of the following methods (only one is necessary): **Email to fgc@fgc.ca.gov; fax to (916) 653-5040; deliver to California Fish and Game Commission, 1416 Ninth Street, Room 1320, Sacramento, CA 95814; or hand-deliver to a Committee meeting.**

Written comments received at the Commission office by 5:00 p.m. on June 3, will be made available to the Committee prior to the meeting. Written comments received between 5:00 p.m. on June 3 and 12 noon on June 5 will be made available to the Committee at the meeting. After 12 noon on June 5, five copies of written comments must be delivered at the meeting, otherwise they will not be made available to the Committee until after the meeting.

The Committee **will not** consider comments regarding proposed changes to regulations that have been noticed. If you wish to provide comment on an otherwise noticed item, please provide your comments during Commission business meetings, via email or fax, or deliver to the commission office.

NOTE: Materials provided to the Committee may be made available to the general public.

SPEAKING AT THE MEETING

Committee meetings operate informally and provide opportunity for everyone to comment on agenda items. If you wish to speak on an agenda item, please follow these guidelines:

1. Raise your hand and wait to be recognized by the Committee co-chair(s).
2. Once recognized, please begin by giving your name and affiliation (if any) and the number of people you represent.
3. Time is limited; please keep your comments precise so that everyone has an opportunity to speak.
4. If there are several speakers with the same concerns, please try to appoint a spokesperson and avoid repetitive comments.

5. If you would like to present handouts or written materials to the Committee, please provide five copies to the designated staff member just prior to speaking.
6. If speaking during public forum, the subject matter you present should not be related to any item on the current agenda (public comment on agenda items will be taken at the time the Committee members discuss that item). As a general rule, public forum is an opportunity to bring matters to the attention of the Committee, but you may also do so via email, standard mail, and fax. At the discretion of the Committee, staff may be requested to follow up on the subject you raise.

WHEN WILL MY AGENDA ITEM BE HEARD?
The Committee begins each session at the time listed on the agenda and generally considers each agenda item in the sequence listed, except in extraordinary circumstances.

VISUAL PRESENTATIONS/MATERIALS
All PowerPoint presentations must be submitted by 12 noon on June 5 and approved by the Commission executive director before the meeting.

1. All electronic formats must be Windows PC compatible.
2. Files created on a Mac are not supported.
3. It is recommended that a print copy of any electronic presentation be submitted in case of technical difficulties.
4. A data projector, laptop and presentation mouse will be available.

LASER POINTERS may only be used by a speaker during a presentation.

California Fish and Game Commission
Draft Tribal Consultation Policy

March 2015

The Policy

On September 19, 2011, Governor Edmund G. Brown, Jr., issued Executive Order B-10-11, which provides, among other things, that it is the policy of the administration that every state agency and department subject to executive control implement effective government-to-government consultation with California Indian Tribes.

Purpose of the Policy

The mission of the California Fish and Game Commission (FGC) is, on the behalf of California citizens, to ensure the long term sustainability of California's fish and wildlife resources by setting policies, establishing appropriate rules and regulations, guiding scientific evaluation and assessments, and building partnerships to implement this mission. California Native American Tribes, whether federally recognized or not, have distinct cultural, spiritual, environmental, economic and public health interests and unique traditional knowledge about the natural resources of California.

The purpose of this policy is to create a means by which tribes and FGC can effectively work together to realize sustainably-managed natural resources of mutual interest.

Policy Implementation

1. Communication*.* Both FGC and the tribes are faced with innumerable demands on their limited time and resources. In the interest of efficiency, FGC will annually host a tribal planning meeting to coordinate the upcoming regulatory and policy activities before FGC. The meeting will provide a venue for education about process, identifying regulatory and policy needs, and developing collaborative interests; this will include inviting sister agencies to participate.

2. Collaboration*.* In areas or subjects of mutual interest, FGC will pursue partnerships with tribes to collaborate on solutions tailored to each tribe's unique needs and capacity. The structure of these collaborative efforts can range from informal information sharing, to Memorandum Of Understanding with more specific agreements regarding working relationships and desired outcomes, to co-management agreements with specific responsibilities and authorities.

3. Record-keeping*.* FGC will maintain a record of all comments provided by tribes and will include them in administrative records where appropriate.

4. Training*.* FGC will provide training to interested tribes on its processes for regulation and policy development.

DRAFT

Draft Marine Resources Committee (MRC) 3-Year Work Plan

(Revised 5/29/2015)

Topic	**2015**			2016			2017		
	MAR (Marina)	**JUL (Trinidad)**	NOV (So. CA)	MAR	JUL	NOV	MAR	JUL	NOV
Lobster FMP	R								
Abalone FMP [and ARMP update]	X	**X**	X	X	X / R				
Fisheries Bycatch Workgroup		**X**	X						
Pier and Jetty Fishing Review		**X**	X						
Herring FMP Development Updates	X								
Special Closures in Central Coast (stakeholder proposal review)	X / R								
Experimental Squid Permits – review of regulations	X								
California's Fishing Communities	X	**X**							
Annual Sport Fish Regulations	X			X			X		
Update to MLMA Master Plan for Fisheries		**(X)**							
Update to MLPA Master Plan for MPAs		**(X)**							
NRDC report on Enforcement Technology Options for CA MPAs		**(X)**							

Notes: = Topics previously referred to MRC

= Possible new topics to recommend for referral to MRC

X = Discussion scheduled

R = MRC recommendation to be developed

From: Karen Garrison
To: Ashcraft, Susan@FGC
Subject: MRC August meeting agenda
Date: Thursday, May 28, 2015 3:53:37 PM

Hi Susan, how are you? I'm writing to ask to get technology options for MPA enforcement, and specifically electronic records management systems, on the MRC agenda for Aug 5.

By the end of June, NRDC plans to release a report that evaluates various technology options, and concludes that electronic RMS should be a top priority for DFW. Of course, it already is! We'd like to briefly sum up our findings, then make a couple of suggestions for next steps.

I talked to Mike Sutton, and he suggested I contact you and ask to have this put on the agenda. Let me know if there's any problem with that or anything else I need to do. I'll send the report and a cover let to commissioners in early July.

Let me know if you need more info. [redacted]

best, karen

--
Karen Garrison
[redacted]

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Add Section 662
Title 14, California Code of Regulations
Re: Petitions for Regulation Change

I. Date of Initial Statement of Reasons: October 21, 2014

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: October 8, 2014
Location: Mt. Shasta, CA

(b) Discussion Hearing Date: December 3, 2014
Location: Van Nuys, CA

(b) Adoption Hearing: Date: February 11, 2015
Location: Sacramento, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Under current law (Government Code Section 11340.6) any interested person may petition the Fish and Game Commission (Commission) to adopt, amend or repeal a regulation. This Section also requires that any petition clearly and concisely state the substance or nature of the requested regulation change, the reason for the request, and reference to the authority of the Commission to take the requested action.

In 2013, the Commission received approximately 80 requests for regulation changes; from January through August 2014, the Commission received 70 requests for regulation changes. The requests are presented to the Commission via mail, email, facsimile and/or oral testimony during a Commission meeting. Many requests lack critical information for the Commission to make an informed decision, leading to additional workload for staff to research and gather relevant information to understand the issue or concern and support decision-making. Often the requests are subsequently forwarded to the Department to provide biological data and expertise, and then added to the agenda of a regularly-scheduled Commission meeting for formal acceptance or rejection.

The public is often confused about the scheduling and timing of Commission action on regulation change requests. To improve

transparency and provide consistent guidance on the Commission's rulemaking process, Commission staff recommends the Commission adopt a regulation and require the use of a form for submitting regulation change proposals.

The proposed regulations add new Section 662, Title 14, California Code of Regulations (CCR), and require that every person petitioning the Commission for a regulation to be added, amended or repealed must use the authorized petition form [FGC 1 (New 10/23/14)].

Under the proposed regulations, Commission staff will review the petition and will reject a petition if it is not submitted on form FGC 1, if it fails to contain necessary information in each of the categories listed on the form FGC 1, if it does not pertain to issues under the Commission's authority, or if a similar regulation change was considered within the previous 12 months and no new information or data is being submitted beyond what was previously submitted.

The proposed regulations specify that an incomplete petition will be returned to the petitioner by the Commission staff within 10 working days of receipt, and that a complete petition will be considered in a two-meeting series:

- At the first meeting, the Commission will formally receive the petition. The petition may also be forwarded to the Department for initial evaluation.

- At the second meeting, the Commission will consider the petition, the Commission staff's recommendation, the Department's initial evaluation, if any, and any oral or written public comments received. At this meeting, the Commission may reject a petition if it finds the petition does not provide sufficient information to indicate that the petitioned change may be warranted, may add the petitioned change to its rulemaking schedule, may refer the petition to one of the Commission's committees for further public input and committee evaluation and recommendation, or may refer the petition to the Department for evaluation and recommendation.

Proposed Form FGC 1 (New 10/23/14) requires the petitioner to provide the following information:

- Petitioner contact information
- Category of regulation change being proposed
- Whether the proposal will add, amend or repeal a regulation
- Whether the petition is related to a previous petition which was rejected
- Authority and reference citations, if known
- A summary of the proposed changes to regulation
- The rationale for the proposed change

- The desired effective date and, if applicable, the nature of the emergency requiring immediate implementation
- Supporting data, reports or other documents, if any
- Any known economic and/or fiscal impacts
- Identification of any forms to be created, amended or repealed

The proposed regulations will also rename Chapter 2 of Subdivision 3, of Division 1, Title 14, CCR, as "Commission Business Practices and Procedures."

The benefits of the proposed regulations are increased transparency and understanding of the Commission's regulatory process, and consistency in the processing of public requests for regulation change.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Section 108, Fish and Game Code.

Reference: Sections 108 and 207, Fish and Game Code; and Sections 11340.6 and 11340.7, Government Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

Economic Impact Assessment

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are being held prior to the notice publication. The 45-day comment period provides adequate time for review of the proposed regulations.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified or brought to the attention of Commission staff.

(b) No Change Alternative:

Under the no change alternative, the public would continue to be confused regarding the scheduling and timing of Commission action on regulation change requests, and petitions for regulation changes would continue to be presented in inconsistent formats, often lacking critical information.

(c) Consideration of Alternatives: In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations only affect the process through which the Commission will receive and consider petitions for regulation changes.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new business, the elimination of existing businesses or the expansion of businesses in California.

The Commission anticipates benefits to the health and welfare in an increase in transparency and understanding of the Commission's regulatory process and consistency in the processing of public requests for regulation change

The Commission does not anticipate any benefits to worker safety or the environment.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.

(h) Effect on Housing Costs: None.

Informative Digest/Policy Statement Overview

Under current law (Government Code Section 11340.6) any interested person may petition the Fish and Game Commission (Commission) to adopt, amend or repeal a regulation. This section also requires that any petition clearly and concisely state the substance or nature of the requested regulation change, the reason for the request, and reference to the authority of the Commission to take the requested action.

The proposed action adds new Section 662, Title 14, California Code of Regulations (CCR). The proposed regulation outlines the process under which petitions will be evaluated and scheduled for receipt and Commission action and requires the use of the form entitled “PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATORY CHANGE,” FGC 1 (New 10/23/14, and being incorporated by reference), for submitting regulation change proposals.

The benefits of the proposed regulation are increased transparency and understanding of the Commission’s regulatory process and consistency in the processing of public requests for regulation change.

Commission staff has searched the CCR and has found that the proposed regulation is neither inconsistent nor incompatible with existing state regulations.

Chapter 2 of Subdivision 3, of Division 1, Title 14, California Code of Regulations is renamed:

Chapter 2. Commission Business Practices and Procedures

Section 662, Title 14, California Code of Regulations, is added to read:

§662. Petitions for Regulation Change.

The following rules and procedures govern the submission and review of petitions for adding, amending, or repealing regulations under the authority of the commission:

(a) Petition Requirement. Except for the department, every person or agency recommending that a regulation be added, amended, or repealed must submit a petition to the commission using the authorized petition form (PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE, FGC 1 (New 10/23/14), which is incorporated by reference herein), available at www.fgc.ca.gov.

(b) Staff Review of Petition: A petition will be rejected by commission staff if it is not submitted on form FGC 1 (New 10/23/14), if it fails to contain necessary information in each of the categories listed on FGC 1, if it does not pertain to regulations under the commission's authority, or if a similar regulation change was considered within the previous 12 months and no new information or data is being submitted beyond what was previously submitted. A rejected petition will be returned to the petitioner by the commission staff within 10 working days of receipt.

(c) Commission Receipt of Petition and Transmittal of Petition to the Department: A complete petition will be scheduled for receipt at the next available commission meeting and may be forwarded to the department for initial evaluation.

(d) Commission Action on Petition: The petition will be scheduled for consideration at the next available meeting after the meeting of receipt as identified in subsection (c). The commission will consider the petition, the commission staff's recommendation, department's initial evaluation, if any, and any oral or written public comments received, and may take one or more of the following actions:

(1) If the commission finds that the petition does not provide sufficient information to indicate that the petitioned change may be warranted, the commission may reject the petition.

(2) If the commission finds that the petition provides sufficient information to indicate that the petitioned change may be warranted, the commission may accept the petition for further consideration and direct one or more of the following actions:

(A) Add the petitioned change to its rulemaking schedule. Further proceedings of the commission on the petitioned change will be held in accordance with the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code).

(B) Refer the petitioned change to one of the commission's committees to gather additional public input and for a committee evaluation and recommendation pursuant to sections 105 and 106 of the Fish and Game Code.

(C) Refer the petitioned change to the department for further evaluation and recommendation.

(e) A petition referred to a committee pursuant to subsection (d)(2)(B) or to the department pursuant to subsection (d)(2)(C) will be reconsidered pursuant to subsection (d) once the evaluation and recommendation has been received from the committee or department.

Note: Authority: Section 108, Fish and Game Code. Reference: Sections 108 and 207, Fish and Game Code; Sections 11340.6 and 11340.7, Government Code.

Tracking Number: (Click here to enter text.)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via facsimile to (916) 653-5040 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the categories listed on this form. A petition will be rejected if it does not pertain to issues under the Commission's authority, or if a similar regulation change was considered within the previous 12 months and no new information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION 1: General Information.

1. **Date:** Click here to enter text.
2. **Person or organization requesting the change**
   Name of primary contact person: Click here to enter text.
   Address: Click here to enter text.
   Telephone number: Click here to enter text.
   Email address: Click here to enter text.

3. **Category of Proposed Change**
   ☐ Sport Fishing
   ☐ Commercial Fishing
   ☐ Hunting
   ☐ Other, please specify: Click here to enter text.

4. **The proposal is to:** (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)
   ☐ Amend Title 14 Section(s):Click here to enter text.
   ☐ Add New Title 14 Section(s): Click here to enter text.
   ☐ Repeal Title 14 Section(s): Click here to enter text.
   ☐ Unknown

5. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** Click here to enter text.
   Or ☐ Not applicable.

6. **List of Authority/Reference Citations, if known**Click here to enter text.
   (*see https://govt.westlaw.com/calregs*)

SECTION 2: Proposal.

Please be succinct. Responses for Section II should not exceed five pages, excluding supporting documentation (Item 10)

7. **Overview -** Summarize the proposed changes to regulations: Click here to enter text.

8. **Rationale -** Describe the problem and the reason for the proposed change. If the proposal is related to a previously submitted petition that was rejected, use highlight or bold font to emphasize the new information and/or data provided: Click here to enter text.

9. **Effective date**: Identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: Click here to enter text.

10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: Click here to enter text.

11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: Click here to enter text.

12. List any forms to be created, amended or repealed: ☐Unknown

Click here to enter text.

SECTION 3: FGC Staff Only

Date received: Click here to enter text.

FGC staff action:

- ☐ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority
- ☐ Reject - same as petition _____
  Tracking Number

Date petitioner was notified of receipt of petition and pending action: _____

Meeting date for FGC consideration: _____

FGC action:

- ☐ Rejected by FGC
- ☐ Accepted for consideration of regulation change
- ☐ Referred for further evaluation: (program and/or individual)

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-adoption Statement of Reasons)

Add Section 662
Title 14, California Code of Regulations
Re: Petitions for Regulation Change

I. Date of Initial Statement of Reasons: October 21, 2014

II. Date of Pre-adoption Statement of Reasons: January 29, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: October 8, 2014
Location: Mt. Shasta, CA

(b) Discussion Hearing Date: December 3, 2014
Location: Van Nuys, CA

(b) Adoption Hearing: Date: February 11, 2015
Location: Sacramento, CA

IV. Description of Modification of Originally Proposed Language of Initial Statement of Reasons:

In subsection 662(b), the proposed regulation has been revised to clarify that a petition may be rejected if **any** petition requesting a **functionally equivalent** regulation change was considered within the previous twelve months. In addition the proposed regulation has been revised to clarify that new information means information not submitted in a previous petition.

In subsection 662(d), the proposed regulation has been revised to clarify that a petition will be scheduled for consideration at the next available **Commission** meeting after the meeting of receipt.

V. Reasons for Modification of Originally Proposed Language of Initial Statement of Reasons:

The proposed modifications have been made for clarity purposes.

VI. Summary of Primary Considerations Raised in Opposition and in Support:

See Attachment A.

Updated Informative Digest/Policy Statement Overview

Under current law (Government Code Section 11340.6) any interested person may petition the Fish and Game Commission (Commission) to adopt, amend or repeal a regulation. This section also requires that any petition clearly and concisely state the substance or nature of the requested regulation change, the reason for the request, and reference to the authority of the Commission to take the requested action.

The proposed action adds new Section 662, Title 14, California Code of Regulations (CCR). The proposed regulation outlines the process under which petitions will be evaluated and scheduled for receipt and Commission action and requires the use of the form entitled "PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATORY CHANGE," FGC 1 (New 10/23/14, and being incorporated by reference), for submitting regulation change proposals.

In subsection 662(b), the proposed regulation has been revised to clarify that a petition may be rejected if *any* petition requesting a *functionally equivalent* regulation change was considered within the previous twelve months. In addition the proposed regulation has been revised to clarify that new information means information not submitted in a previous petition.

In subsection 662(d), the proposed regulation has been revised to clarify that a petition will be scheduled for consideration at the next available *Commission* meeting after the meeting of receipt.

The benefits of the proposed regulation are increased transparency and understanding of the Commission's regulatory process and consistency in the processing of public requests for regulation change.

Commission staff has searched the CCR and has found that the proposed regulation is neither inconsistent nor incompatible with existing State regulations.

Chapter 2 of Subdivision 3, of Division 1, Title 14, California Code of Regulations is renamed:

Chapter 2. Commission Business Practices and Procedures

Section 662, Title 14, California Code of Regulations, is added to read:

§662. Petitions for Regulation Change.

The following rules and procedures govern the submission and review of petitions for adding, amending, or repealing regulations under the authority of the commission:

(a) Petition Requirement. Except for the department, every person or agency recommending that a regulation be added, amended, or repealed must submit a petition to the commission using the authorized petition form (PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE, FGC 1 (New 10/23/14), which is incorporated by reference herein), available at www.fgc.ca.gov.

(b) Staff Review of Petition: A petition will be rejected by commission staff if it is not submitted on form FGC 1 (New 10/23/14), if it fails to contain necessary information in each of the categories listed on FGC 1, if it does not pertain to regulations under the commission's authority, or if ~~a similar~~any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no ~~new~~ information or data is being submitted beyond what was previously submitted. A rejected petition will be returned to the petitioner by the commission staff within 10 working days of receipt.

(c) Commission Receipt of Petition and Transmittal of Petition to the Department: A complete petition will be scheduled for receipt at the next available commission meeting and may be forwarded to the department for initial evaluation.

(d) Commission Action on Petition: The petition will be scheduled for consideration at the next available commission meeting after the meeting of receipt as identified in subsection (c). The commission will consider the petition, the commission staff's recommendation, department's initial evaluation, if any, and any oral or written public comments received, and may take one or more of the following actions:

(1) If the commission finds that the petition does not provide sufficient information to indicate that the petitioned change may be warranted, the commission may reject the petition.

(2) If the commission finds that the petition provides sufficient information to indicate that the petitioned change may be warranted, the commission may accept the petition for further consideration and direct one or more of the following actions:

(A) Add the petitioned change to its rulemaking schedule. Further proceedings of the commission on the petitioned change will be held in accordance with the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code).

(B) Refer the petitioned change to one of the commission's committees to gather additional public input and for a committee evaluation and recommendation pursuant to sections 105 and 106 of the Fish and Game Code.

(C) Refer the petitioned change to the department for further evaluation and recommendation.

(e) A petition referred to a committee pursuant to subsection (d)(2)(B) or to the department pursuant to subsection (d)(2)(C) will be reconsidered pursuant to subsection (d) once the evaluation and recommendation has been received from the committee or department.

Note: Authority: Section 108, Fish and Game Code. Reference: Sections 108 and 207, Fish and Game Code; Sections 11340.6 and 11340.7, Government Code.

KEY:

Regulatory language originally proposed to be added is shown in single underline format.

Regulatory text newly proposed to be added is shown in highlighted double underline format.

Regulatory language originally proposed to be added but now proposed to be deleted is shown in ~~highlighted single underline and single strikeout format~~.

Regulatory language proposed to be added to or deleted from subsection (b) in the February 12, 2015 continuation notice is not shown in subsection (b); however, those proposed changes are incorporated in the proposed new subsection (d)(2). Text proposed to be deleted in the February 12, 2015 continuation notice and which remains proposed for deletion is shown in ~~single underline and double strikeout format~~. Text proposed to be added in the February 12, 2015 continuation notice and which remains proposed to be added is shown in highlighted bold underline format.

Regulatory language proposed to be added to subsection (d) in the February 12, 2015 continuation notice and which remains proposed to be added is shown in highlighted bold underline format.

Chapter 2 of Subdivision 3, of Division 1, Title 14, California Code of Regulations is renamed:

Chapter 2. Commission Business Practices and Procedures

Section 662, Title 14, California Code of Regulations, is added to read:

§662. Petitions for Regulation Change.

The following rules and procedures govern the submission and review of petitions for adding, amending, or repealing regulations under the authority of the commission:

(a) Petition Requirement. Except for the department, every person or agency recommending that a regulation be added, amended, or repealed must submit a petition to the commission using the authorized petition form (PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE, FGC 1 (New 10/23/14), which is incorporated by reference herein), available at www.fgc.ca.gov.

(b) Staff Review of Petition: A petition will be rejected by commission staff if it is not submitted on form FGC 1 (New 10/23/14), if it fails to contain necessary information in each of the required categories listed on FGC 1, or if it does not pertain to regulations under the commission's authority~~, or if a similar regulation change was considered within the previous 12 months and no new information or data is being submitted beyond what was previously submitted~~. A rejected

petition will be returned to the petitioner by the commission staff within 10 working days of receipt.

(c) ~~Commission Receipt of Petition and~~ Transmittal of Petition to the Department: ~~A complete~~ An accepted petition ~~will be scheduled for receipt at the next available commission meeting and~~ may be forwarded to the department for initial evaluation.

(d) Commission Action on Petition: ~~The~~An accepted petition will be scheduled for consideration at the next available commission meeting~~ after the meeting of receipt as identified in subsection (c)~~. The commission will consider the petition, the commission staff's recommendation, department's initial evaluation, if any, and any oral or written public comments received, and may take one or more of the following actions:

(1) If the commission finds that the petition does not provide sufficient information to indicate that the petitioned change may be warranted, the commission may ~~reject~~ deny the petition.

(2) If ~~a similar~~any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no ~~new~~ information or data is being submitted beyond what was previously submitted, the commission may deny the petition.

~~(2)~~(3) If the commission finds that the petition provides sufficient information to indicate that the petitioned change may be warranted, the commission may ~~accept~~ grant the petition for further consideration and ~~direct one or more of the following actions:~~

~~(A) Add~~add the petitioned change to its rulemaking schedule. Further proceedings of the commission on the petitioned change will be held in accordance with the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code).

~~(B) Refer the petitioned change to one of the commission's committees to gather additional public input and for a committee evaluation and recommendation pursuant to sections 105 and 106 of the Fish and Game Code.~~

~~(C) Refer the petitioned change to the department for further evaluation and recommendation.~~

~~(e) A petition referred to a committee pursuant to subsection (d)(2)(B) or to the department pursuant to subsection (d)(2)(C) will be reconsidered pursuant to subsection (d) once the evaluation and recommendation has been received from the committee or department.~~

Note: Authority: Section 108, Fish and Game Code. Reference: Sections 108 and 207, Fish and Game Code~~; Sections 11340.6 and 11340.7, Government Code~~.

KEY:
Originally proposed text for this form is shown in normal format.
Text proposed to no longer be included on this form is shown in ~~strikeout format~~.
Text newly proposed to be added to this form is shown in <u>underline format</u>.

State of California – Fish and Game Commission
PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE
FGC 1 (NEW 10/23/14) Page 1 of 2

Tracking Number: (Click here to enter text.)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 ~~or via facsimile to (916) 653-5040~~ or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the <u>required</u> categories listed on this form <u>(Section I)</u>. A petition will be rejected if it does not pertain to issues under the Commission's authority<u>. A petition may be denied</u>~~, or~~ if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION ~~1~~<u>I</u>: ~~General~~ <u>Required</u> Information.

<u>Please be succinct. Responses for Section I should not exceed five pages</u>

~~1. Date:~~ ~~Click here to enter text.~~
~~2.~~<u>1.</u> Person or organization requesting the change <u>(Required)</u>
Name of primary contact person: Click here to enter text.
Address: Click here to enter text.
Telephone number: Click here to enter text.
Email address: Click here to enter text.

~~3. Category of Proposed Change~~
~~☐ Sport Fishing~~
~~☐ Commercial Fishing~~
~~☐ Hunting~~
~~☐ Other, please specify:~~

~~4. The proposal is to:~~ (~~*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*~~)
~~☐ Amend Title 14 Section(s):~~ Click here to enter text.
~~☐ Add New Title 14 Section(s):~~
~~☐ Repeal Title 14 Section(s):~~
~~☐ Unknown~~

~~**5. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition**~~

~~Or ☐ Not applicable.~~

~~6.~~2. List of Authority/Reference Citations (Required):~~, if known~~ Click here to enter text.

(*see* *https://govt.westlaw.com/calregs*)

~~7.~~3. Overview (Required) - Summarize the proposed changes to regulations: Click here to enter text.

~~8.~~4. Rationale (Required) - Describe the problem and the reason for the proposed change. If the proposal is related to a previously submitted petition that was rejected, use highlight or bold font to emphasize the new information and/or data provided: Click here to enter text.

SECTION ~~2~~II: ~~Proposal.~~Optional Information

~~*Please be succinct. Responses for Section II should not exceed five pages, excluding supporting documentation (Item 10)*~~

5. Date of Petition: Click here to enter text.

6. Category of Proposed Change

☐ Sport Fishing
☐ Commercial Fishing
☐ Hunting
☐ Other, please specify: Click here to enter text.

7. The proposal is to: (*To determine section number(s), see current year regulation booklet or https://govt.westlaw.com/calregs*)

☐ Amend Title 14 Section(s): Click here to enter text.
☐ Add New Title 14 Section(s): Click here to enter text.
☐ Repeal Title 14 Section(s): Click here to enter text.

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition Click here to enter text.
Or ☐ Not applicable.

~~**7. Overview** - Summarize the proposed changes to regulations:~~

~~**8. Rationale** - Describe the problem and the reason for the proposed change. If the proposal is related to a previously submitted petition that was rejected, use highlight or bold font to emphasize the new information and/or data provided:~~

9. Effective date: ~~Identify~~ If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: Click here to enter text.

10. Supporting documentation: Optional. Identify and attach to the petition any information supporting the proposal including data, reports and other documents: Click here to enter text.

11. Economic or Fiscal Impacts: Optional. Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: Click here to enter text.

12. Forms: ~~List~~ If applicable, list any forms to be created, amended or repealed: ~~☐ Unknown~~

Click here to enter text.

SECTION 3: FGC Staff Only

Date received: Click here to enter text.

FGC staff action:

☐ Accept - complete
☐ Reject - incomplete
☐ Reject - outside scope of FGC authority
~~☐ Reject - same as petition _____~~
~~Tracking Number~~

Date petitioner was notified of receipt of petition and pending action: _____

Meeting date for FGC consideration: _____

FGC action:

- ☐ ~~Rejected~~ Denied by FGC
- ☐ Denied - same as petition _____
  Tracking Number
- ☐ ~~Accepted~~ Granted for consideration of regulation change
- ~~☐ Referred for further evaluation: (program and/or individual)~~

11340.6.
Except where the right to petition for adoption of a regulation is restricted by statute to a designated group or where the form of procedure for such a petition is otherwise prescribed by statute, any interested person may petition a state agency requesting the adoption, amendment, or repeal of a regulation as provided in Article 5 (commencing with Section 11346). This petition shall state the following clearly and concisely:
(a) The substance or nature of the regulation, amendment, or repeal requested.
(b) The reason for the request.
(c) Reference to the authority of the state agency to take the action requested.
(Added by Stats. 1994, Ch. 1039, Sec. 5. Effective January 1, 1995.)

11340.7.
(a) Upon receipt of a petition requesting the adoption, amendment, or repeal of a regulation pursuant to Article 5 (commencing with Section 11346), a state agency shall notify the petitioner in writing of the receipt and shall within 30 days deny the petition indicating why the agency has reached its decision on the merits of the petition in writing or schedule the matter for public hearing in accordance with the notice and hearing requirements of that article.
(b) A state agency may grant or deny the petition in part, and may grant any other relief or take any other action as it may determine to be warranted by the petition and shall notify the petitioner in writing of this action.
(c) Any interested person may request a reconsideration of any part or all of a decision of any agency on any petition submitted. The request shall be submitted in accordance with Section 11340.6 and include the reason or reasons why an agency should reconsider its previous decision no later than 60 days after the date of the decision involved. The agency's reconsideration of any matter relating to a petition shall be subject to subdivision (a).
(d) Any decision of a state agency denying in whole or in part or granting in whole or in part a petition requesting the adoption, amendment, or repeal of a regulation pursuant to Article 5 (commencing with Section 11346) shall be in writing and shall be transmitted to the Office of Administrative Law for publication in the California Regulatory Notice Register at the earliest practicable date. The decision shall identify the agency, the party submitting the petition, the provisions of the California Code of Regulations requested to be affected, reference to authority to take the action requested, the reasons supporting the agency determination, an agency contact person, and the right of interested persons to obtain a copy of the petition from the agency.
(Added by Stats. 1994, Ch. 1039, Sec. 6. Effective January 1, 1995.)

State of California
Department of Fish and Wildlife

M e m o r a n d u m

Date: May 14, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for June 10 - 11, 2015 Fish and Game Commission Meeting request for Notice Authorization Re: Commercial Fishing Logbooks for Market Squid (Amend Subsection (e) of Section 149 and Appendix A of Subdivision 1 of Division 1, Title 14 CCR)**

The Department of Fish and Wildlife (Department) requests that the Fish and Game Commission (Commission) authorize publication of notice of its intent to consider amendment of existing regulations for the commercial market squid fishery (Section 149). The Initial Statement of Reasons (ISOR) includes proposed modifications to the regulatory text to reflect new logbook versions.

Proposed changes to the Market Squid Logbook provisions include:

- Update Market Squid Vessel Logbook (DFG 149a) and Market Squid Light/Brail Boat Logbook (DFG 149b) to bring these forms into compliance with the standards set by the Department's Forms Management Coordinator.
- Improve instructions that explain how the logs are to be filled out.
- Improve the quality of data that are received by the Department.
- Refer to the revised forms entitled with an updated version number "Market Squid Vessel Logbook – DFW 149a (Rev. 05/01/15)", and "Market Squid Light/Brail Boat Logbook – DFW 149b (Rev. 05/01/15)."

Additionally, other non-substantive changes are proposed to the regulations of Section 149 in order to improve clarity and organization. All amendments proposed in this rulemaking would be consistent with the Market Squid Fishery Management Plan, and fall within its scope.

At the April 8, 2015 Fish and Game Commission meeting, the Department presented a potential regulatory package which included the above changes as well as proposed changes to lighting requirements in Subsection (f), (g), and (h) of Section 149, Title 14 CCR. These proposed lighting changes have been removed from this package to allow for further scoping of current practices. Further scoping has been deemed necessary to more fully evaluate the proposed lighting modifications.

If you have any questions or need additional information, please contact Dr. Craig Shuman, Regional Manager in the Department's Marine Region, by telephone at (805) 568-1246. The public notice for this rulemaking should identify Environmental Scientist, Laura Ryley as the Department's point of contact. She can be reached at (831) 649-7142 or by email at Laura.Ryley@wildlife.ca.gov.

Attachments

ec: Dan Yparraguirre, Deputy Director
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Dan.Yparraguirre@wildlife.ca.gov

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Laura.Ryley@wildlife.ca.gov

Chelsea Protasio, Environmental Scientist
Marine Region (Region 7)
Chelsea.Protasio@wildlife.ca.gov

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Section 149 and
Appendix A of Subdivision 1 of Division 1
Title 14, California Code of Regulations
Re: Commercial Fishing Logbooks
for Market Squid

I. Date of Initial Statement of Reasons: May 11, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: June 10, 2015
Location: Mammoth Lakes

(b) Discussion/Adoption Hearing: Date: October 7, 2015
Location: Los Angeles

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Market squid (*Doryteuthis (Loligo) opalescens*) is managed under the California Market Squid Fishery Management Plan (MSFMP). Section 149, Title 14, California Code of Regulations (CCR), governs commercial market squid fishing activities off California, pursuant to the MSFMP. Market squid are important to California's commercial and recreational fisheries and as forage species for fish, marine mammals, and birds. Market squid is one of the most valuable California commercial fisheries. Although the market squid population fluctuates due to environmental conditions, commercial harvest typically occurs south of San Francisco with the majority taken from southern California waters.

The proposed regulations will revise and standardize logbooks that are currently in use.

Subsection 149(e), Title 14, CCR, currently requires that any operator of a commercial market squid vessel, or person who possesses a valid Market Squid Vessel Permit, Market Squid Brail Permit, or Market Squid Light Boat Permit shall complete and submit an accurate record of his/her fishing, lighting, or brailing activities on a form provided by the California Department of Fish and Wildlife (Department), as appropriate to the type of fishing activity. The forms provided by the Department, referred to as

DRAFT

logs or logbooks, are used to assist the Department in management of the commercial market squid fishery.

Subsection 149(e) currently specifies the fishing, lighting, or brailing activity records for commercial market squid as “Market Squid Vessel Logbook – DFG 149a (9/01), or Market Squid Light/Brail Boat Logbook – DFG 149b (10/05)”.

Proposed Regulation Changes

Amend Subsection (e) of Section 149, Title 14, CCR to update and reorganize existing logbook forms.

Market Squid Vessel Logbook (DFG 149a) and Market Squid Light/Brail Boat Logbook (DFG 149b) are proposed to be updated to bring these forms into compliance with the standards set by the Department’s Forms Management Coordinator, improve instructions that explain how the logs are to be filled out, and improve the quality of data that are received by the Department.

Updated instructions that explain when and how logs are to be filled out as well as when the logs are to be turned in to the Department will accompany the forms. The instructions for completing the market squid logs tell the licensee or operator how to fill out the forms to ensure that accurate and consistent data are recorded (CCR Title 14 sections 149 and 190, Fish and Game Code sections 8010 and 8026). The forms and instructions will be inserted as part of CCR, Title 14, Appendix A and the old forms (DFG 149a (9/01) and DFG 149b (10/05)) will be removed.

Proposed changes to subsection 149(e) refer to the revised forms entitled with an updated version number “Market Squid Vessel Logbook – DFW 149a (Rev. 05/01/15)”, and “Market Squid Light/Brail Boat Logbook – DFW 149b (Rev. 05/01/15).”

Market Squid Vessel Logbook - DFW 149a (Rev. 05/01/15) differs from DFG 149a (9/01) as follows:

1. Form instructions were updated to include additional instructions for new fields and to improve the clarity of existing instructions.
2. Form contents have been updated to replace all instances of “Department of Fish and Game” with “Department of Fish and Wildlife”.
3. Form header section has been updated to be in compliance with the standards set by the Department’s Forms Management Coordinator.
4. The “Market Squid Vessel Summary Page” has been retitled “Market Squid Vessel Profile”.

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5. The log page and profile page now ask for “Vessel ID Number” as opposed to “Vessel F&G Number”. The field name was changed to be consistent with language used in landing receipt books and other logbooks.
6. The log page and profile page now ask for “Captain’s Name” and “Captain’s ID Number” as opposed to “Fisherman’s Name” and “Fisherman’s ID Number”. This represents a change in language used and not in data collected. The change was made to make the text consistent with the light/brail boat log.
7. Addition of a field to collect the “Vessel Permit Number”. This new field was added to the profile and log page. The purpose of this field is to better facilitate the link between logbook records and the unique vessel permit numbers in the Department’s Automated License Data System (ALDS).
8. The profile page now asks for “Light Generated” under the heading of “Attracting Lights Used” as opposed to “Wattage”. The captain is instructed to circle the appropriate unit type (“W” for watts or “L” for lumens). The purpose of this change is to offer more options for data collection as technology evolves.
9. An extra line was added under “Attracting Lights Used” to allow for more space for collection of light information.
10. Units of measure have been added next to “Boat Length” and “Hold Capacity” in the “Vessel Characteristics” section of the profile page.
11. Units of measure have been added next to all net characteristics on the profile page.
12. “Auxiliary Engine” was changed to “Generator” in the “Horsepower” section of the profile page.
13. The “Please mark whether this is:” section of the profile page has been removed as this information is no longer necessary since the intent is to have this page fully completed with each logbook.
14. An “Other” section was added to the section of the profile page that collects details of types of “Electronics Used”.
15. A section to collect “Brail scoop capacity” was added to the profile page in the event that a vessel permitted boat uses brail instead of seine gear.
16. The “Crew members” section of the profile page now asks for “ID Number” as opposed to “License No.” This does not represent a change in the data collected but a change in the language used to collect the data. The change makes this field consistent with other language used on the form.
17. The “List Captain first” text was removed from the “Crew members” section of the profile page. Listing of captain in this section of the profile page is not necessary since the captain’s information is already recorded in the “Captain’s Name” and “Captain’s ID Number” fields.
18. A field named “Alpha Code” was added to the log page. This field has been automatically populated with values between “A” and “H”. The presence of this field is related to the squid logbook database and does not represent extra work for the captain filling out the log.

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19. The “Set Number” field description on the log page was updated to include additional text that instructs captains to record “B” in the “Set Number” field if they are recording fishing activity using brail gear.
20. The “Set Time” field on the log page was updated so that the captain has the option to record set time in 12 hour format and when using this format, the captain will need to circle “AM” or “PM”. These changes were made to eliminate uncertainty related to whether or not set time had been recorded using 24 hour format.
21. Additional text was added to describe the requirements of the “Set Position” field. The text includes a description of the level of accuracy to which location data should be reported (i.e., decimal minutes to hundredths place) along with examples.
22. The “Name of light boat used, if any” field name was edited to “Name of light boat set upon”. This does not represent a change to the data collected.
23. The field that asks whether or not the vessel used its own lights has been removed from the log.
24. The “Catch Estimate” field was updated to specify that “short tons” should be recorded.
25. The word “Primary” was removed from the “Bycatch” field since the intent of this field is to collect all bycatch information.
26. The “Comments” section description was expanded to include additional examples of the type of information that should be recorded.
27. “Certified under penalty of perjury as true and correct” was added under the area for captain’s signature. This step was taken to make the logbooks consistent with landing receipt books.
28. The citation of Fish and Game Code Section 7923 was removed from item (C) of the “Notice to Individuals” section of this form because Section 7923 does not apply to squid logbooks.
29. Text related to a Memorandum of Understanding (MOU) with the National Oceanic and Atmospheric Administration was removed from the “Notice to Individuals” section of this form since this MOU is no longer in place.
30. Other minor clerical changes were made to the “Notice to Individuals” section.

<u>Market Squid Light/Brail Boat Logbook - DFW 149b (Rev. 05/01/15) differs from DFG 149b (10/05) as follows:</u>

1. Form instructions were updated to include additional instructions for new fields and to improve the clarity of existing instructions.
2. Form contents have been updated to replace all instances of “Department of Fish and Game” with “Department of Fish and Wildlife”.
3. Form header sections have been updated so that they are in compliance with the standards set by the Department’s Forms Management Coordinator.

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4. The log page and profile page now ask for “Vessel ID Number” as opposed to “Vessel F&G Number” (log page) and “Vessel FG Number” (profile page). The field name was changed to be consistent with language used in landing receipt books and other logbooks.
5. The profile page now asks for “Captain’s Name” and “Captain’s ID Number” as opposed to “Fisherman’s Name” and “Fisherman’s L#”. This represents a change in language used and not in data collected. The change was made to make the text consistent with the log page.
6. Addition of a field to collect the “Light or Brail Boat Permit Number”. This new field was added to the profile and log pages. The purpose of this field is to better facilitate the link between logbook records and the unique light or brail permit numbers in the Department’s Automated License Data System (ALDS).
7. The profile page now asks for “Light Generated” under the heading of “Attracting Lights Used” as opposed to “Wattage”. The captain is instructed to circle the appropriate unit type (“W” for watts or “L” for lumens). The purpose of this change is to offer more options for data collection as technology evolves.
8. An extra line was added under “Attracting Lights Used” to allow for more space for collection of light information.
9. Units of measure have been added next to “Boat Length” and “Hold Capacity” in the “Vessel Characteristics” section of the profile page.
10. The “Mark whether this is:” section of the profile page has been removed as this information is no longer necessary.
11. An “Other” section was added to the section of the profile page that collects details of other types of “Electronics Used”.
12. The “Net Type” section was removed from the profile page since purse seine, drum seine, and lampara are not legal gear types for the fishing activity recorded in this logbook.
13. The “Scoop Capacity” field was expanded to specifically ask for circumference in feet, depth in feet, and average pounds per scoop.
14. A section was added to the profile page to collect information about the vessel’s fish hold’s water system.
15. The crew member section of the profile page now asks for “ID Number” as opposed to “License #”. This does not represent a change in the data collected but a change in the language used to collect the data. The change makes this field consistent with other language used on the form.
16. The “List Captain first” text was removed from the “Crew members” section of the profile page. Listing of captain in this section of the profile page is not necessary since the captain’s information is already recorded in the “Captain’s Name” and “Captain’s ID Number” fields.
17. The “General Location” field was replaced with a “Location” field that asks for the Department block code if operating as a light boat, or latitude and longitude in degrees decimal minutes to the

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hundredths place if operating as a brail boat. The purpose of this change is to collect higher resolution spatial data for brail fishing activities and to collect more standardized and easy to interpret location data for light boat activity.

18. Addition of a field to collect start and end time of brail fishing activity (brailing). The purpose is to collect additional data needed for management of the fishery.
19. Addition of a field to collect bottom depth during brail fishing activity. The purpose is to collect additional data needed for management of the fishery.
20. Addition of fields to collect bycatch species and weight associated with brail fishing activity. The purpose is to collect additional data needed for management of the fishery.
21. The "Comments" section description was expanded to include additional examples of the type of information that should be recorded.
22. "Certified under penalty of perjury as true and correct" was added under the area for captain's signature. This step was taken to make the logbooks consistent with the landing receipt books.
23. The citation of Fish and Game Code Section 7923 was removed from item (C) of the "Notice to Individuals" section of this form because Section 7923 does not apply to squid logbooks.
24. Text related to a Memorandum of Understanding (MOU) with the National Oceanic and Atmospheric Administration was removed from the "Notice to Individuals" section of this form since this MOU is no longer in place.
25. Other minor clerical changes were made to the "Notice to Individuals" section.

Amend Section 149, Title 14, CCR, to make non-substantive changes for clarity and ease of use.

Additional changes are also proposed to improve the organization, clarity and consistency of the regulations.

Benefits of the Regulations

The updated logbooks and regulation will assist the Department's environmental staff in managing the market squid fishery. Consistent with Fish and Game Code Section 7055, the proposed regulations benefit persons engaged in the market squid fishery because the changes are aligned with sustainable fishing activities as described in the MSFMP. The proposed regulatory action will benefit fishermen, processors, the State's economy, and the environment by maintaining a healthy and sustainable market squid fishery.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 7078, 7701, 7708, 8026, 8425 and 8429.5, Fish and

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Game Code.

Reference: Sections 7701, 7708, 8026, 8425, 8429.5, 8429.7, 12159 and 12160, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None

(d) Identification of Reports or Documents Supporting Regulation Change:

CDFG 2005. Final Market Squid Fishery Management Plan (dated March 25, 2005). California Department of Fish and Game, Sacramento, California. http://www.dfg.ca.gov/marine/msfmp/

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

No public meetings are being held prior to the notice publication. The 45-day comment period provides adequate time for review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified by or brought to the attention of Commission staff that would have the same desired regulatory effect.

(b) No Change Alternative:

The no change alternative was considered and rejected because the current forms do not meet the Department's Forms Management standards and collect data that is less efficient in assisting the Department in management of the commercial market squid fishery.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

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VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made.

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states. The proposed regulations continue to allow all actively permitted market squid vessels (vessel, light, and brail) to participate in a directed fishery for market squid during the commercial market squid season until the season closes. The proposed regulations update the logbooks currently in use by commercial squid fishermen. These changes are not expected to increase the time spent to complete the log.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new businesses or the elimination of existing businesses, or the expansion of businesses in California.

The Commission does not anticipate any benefits to the health and welfare of California residents or worker safety.

The Commission anticipates benefits to the environment in the sustainable management of a healthy squid resource.

(c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

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(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment

The proposed regulations will revise logbooks that are currently in use.

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State

The proposed action will not affect the creation or elimination of jobs in the State because the proposed amendments update the logbooks currently in use by commercial squid fishermen. These changes are not expected to increase the time spent to complete the log and will not change the volume of economic activity. This change is administrative in nature and will not require new gear, impose compliance costs or impact the volume of fishing activity.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State

The proposed regulations are not anticipated to result in the elimination of existing businesses in the State, nor spur the creation of new businesses because the proposed amendments update the logbooks currently in use by commercial squid fishermen. These changes are not expected to increase the time spent to complete the log and will not change the volume of economic activity. This change is administrative in nature and will not require new gear, impose compliance costs or impact the volume of fishing activity.

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(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State

The proposed regulations are not anticipated to result in the expansion of businesses currently doing business in the State because the proposed amendments update the logbooks currently in use by commercial squid fishermen. These changes are not expected to increase the time spend to complete the log and will not change the volume of economic activity. This change is administrative in nature and will not require new gear, impose compliance costs or impact the volume of fishing activity.

(d) Benefits of the Regulation to the Health and Welfare of California Residents

The Commission anticipates generalized benefits to the health and welfare of California residents through the improved protection of the market squid population and the fish and wildlife resources that depend upon them.

The proposed regulations are intended to add administrative clarity that should help to fulfill the goals set forth in the MSFMP, adopted by the Commission in August 2004. Adherence to the MSFMP is anticipated to benefit persons engaged in the market squid fishery by supporting the long-term viability of market squid fisheries and associated business activities.

(e) Benefits of the Regulation to Worker Safety

The proposed regulations represent a neutral effect, offering neither benefits nor detriment to worker safety in the State.

(f) Benefits of the Regulation to the State's Environment

The proposed regulations are consistent with the goals set forth in the MSFMP; “to manage the market squid resource to ensure long-term resource conservation and sustainability, and to develop a framework for management that [is] responsive to environmental and socioeconomic changes.”

The Commission anticipates benefits to the environment in the sustainable management of the squid resource and benefits to species dependent upon a healthy squid resource. The proposed changes to the regulations support the Marine Life Management Act (MLMA) [MLMA, Statutes 1999 Chapter 483], which declares that “conservation and management programs prevent overfishing, rebuild depressed stocks, ensure conservation, facilitate long term protection and, where feasible, restore marine fishery habitats" [FGC, subsection 7055(b); see also Section 7056(b), (c)].

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The Legislature declared that to prevent excessive fishing effort in the market squid fishery and to develop a plan for the sustainable harvest of market squid, it was necessary to adopt and implement a fishery management plan (FMP) for the California market squid fishery that sustains both the squid population and the marine life that depends on it. The proposed regulation change clarifies the implementation of the market squid FMP.

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Informative Digest/Policy Statement Overview

The Market Squid Fishery Management Plan (MSFMP) was developed under the provisions set forth by the Marine Life Management Act (MLMA) and sets goals and objectives to govern the conservation, sustainable use, and restoration of the market squid resource. Section 149, Title 14, California Code of Regulations (CCR), governs commercial market squid fishing activities off California, pursuant to the MSFMP.

Current regulations prescribe the use of logbooks for the collection of fishing data. Market Squid Vessel Logbook (DFG 149a) and Market Squid Light/Brail Boat Logbook (DFG 149b) are proposed to be updated to bring these forms into compliance with the standards set by the Department of Fish and Wildlife's (Department) Forms Management Coordinator, improve instructions that explain how the logs are to be filled out, and improve the quality of data that are received by the Department. Updated instructions will accompany the forms. The forms and instructions will be inserted as part of CCR, Title 14, Appendix A, and the old forms (DFG 149a (9/01) and DFG 149b (10/05)) will be deleted.

The follow changes are proposed:

- Subsection 149(e) is proposed to be amended to refer to the revised forms entitled with an updated version number "Market Squid Vessel Logbook – DFW 149a (Rev. 05/01/15)", and "Market Squid Light/Brail Boat Logbook – DFW 149b (Rev. 05/01/15)."

- Additional changes are also proposed to improve the organization, clarity and consistency of the regulations.

Benefits of the Regulations

The proposed regulatory action will benefit fishermen, processors, the State's economy, and the environment by maintaining a healthy and sustainable market squid fishery.

Consistency with State Regulations

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. Commission staff has searched the California Code of Regulations and statutes and has found no other State regulations related to the take of market squid and no other State agency with authority to promulgate commercial squid fishing regulations.

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Regulatory Language

Amend Section 149, Title 14, CCR, as follows:

§ 149. Commercial Taking of Market Squid.
Requirements of this Section apply both to vessels taking squid and to vessels attracting squid with lights for the purpose of commercial take. Incidental commercial take of market squid that meets the criteria specified in subsection (*l*) below, and commercial take of market squid for live bait as described in subsection (m) below are not subject to the requirements of this Section, unless expressly specified.
(a) Permit Required. No person shall take, land, or attract squid by light for commercial purposes, except as provided in subsections (*l*) and (m) below, unless the owner of that vessel has a valid market squid permit issued pursuant to Section 149.1 or Section 149.3 of these regulations for use on that vessel that has not been suspended or revoked.
(b) Seasonal Catch Limitation.
(1) For the period from April 1 through March 31 of the following year, a total of not more than 118,000 short tons of market squid may be taken statewide for commercial purposes.
(2) Closure Process
(A) The department shall estimate, from the current trend in landings, when the Seasonal Catch Limit will be reached, and will publicly announce the effective date of closure of the directed commercial fishery on VHF/channel 16 between the hours of 10:00 p.m. and 12:00 a.m. (midnight).
(B) It shall be the responsibility of all operators of permitted market squid vessels to monitor VHF/channel 16 to determine when the Seasonal Catch Limit is expected to be reached and the fishery closed. Any announcement issued or made by the department on VHF/channel 16 shall constitute official notice.
(c) Time Closures. North of a westerly extension of the United States - Republic of Mexico boundary line:
(1) Fishing Days: Market squid may not be taken for commercial purposes between 1200 hours (noon) on Friday and 1200 hours (noon) on Sunday of each week.
(2) Seasonal Closure: When the Seasonal Catch Limit defined in subsection (b) has been reached and the commercial fishery is closed, squid may be taken for commercial purposes only incidentally to the take of other target species and subject to the limitations defined in subsection 149*(l)* or for live bait as defined in subsection 149(m) through March 31.
(d) Closed Areas for Seabirds. Market squid may not be taken for commercial purposes utilizing attracting lights in all waters of the Gulf of the Farallones National Marine Sanctuary. Boundaries of the Sanctuary are defined as those in effect on August 27, 2004, pursuant to Title 15, Code of Federal Regulations (CFR), Part 922, Subpart H. This regulation also applies to vessels pursuing squid for live bait purposes.
(e) Records. Pursuant to Section 190 of these regulations, any operator of a commercial market squid vessel, or person who possesses a valid Market Squid Vessel Permit, Market Squid Brail Permit, or Market Squid Light Boat Permit shall complete and submit an accurate record of his/her squid fishing, lighting, or brailing activities on a form

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(Market Squid Vessel Logbook - ~~DFG 149a (9/01)~~DFW 149a (Rev. 05/01/15), or Market Squid Light/Brail Boat Logbook - ~~DFG 149b (10/05)~~DFW 149b (Rev. 05/01/15), which are located in Appendix A of Subdivision 1 of Division 1 of Title 14, CCR) provided by the department, as appropriate to the type of fishing activity. Logbook records shall be transmitted to the department on or before the 10th day of each month following the month that fishing activity occurred.

(f) Use of Lights to Aggregate Squid. It is unlawful to attract squid by light except as authorized under permits described in subsection 149.1(b) or Section 149.3 of these regulations. This regulation does not apply to seine skiffs of a permitted vessel, or to vessels pursuing squid for live bait purposes only.

(g) Maximum Wattage. Each vessel fishing for squid or lighting for squid shall utilize a total of no more than 30,000 watts of lights to attract squid at any time.

(h) Light Shields. Each vessel fishing for squid or lighting for squid will reduce the light scatter of its fishing operations by shielding the entire filament of each light used to attract squid and orienting the illumination directly downward, or providing for the illumination to be completely below the surface of the water. The lower edges of the shields shall be parallel to the deck of the vessel.

(i) Forfeiture. Squid landed or possessed in violation of this Section or any other provision of the Fish and Game Code or ~~Commission~~these regulations shall be forfeited to the department. The squid shall be sold or disposed of in a manner to be determined by the department. The proceeds from all sales shall be paid into the Fish and Game Preservation Fund.

(j) Citations for violations of this Section may be issued to the vessel operator, crewmembers, and/or the holder of a market squid permit issued pursuant to Section 149.1 or 149.3~~, Title 14, CCR~~ of these regulations.

(k) Exemption from Tidal Invertebrate Permit. Operators and crewmembers of a commercial market squid vessel or light boat operating under the provisions of a commercial market squid permit are not required to possess a Tidal Invertebrate Permit, but are subject to the provisions of Section 123 of these regulations.

(*l*) Incidental Take Allowance. Pursuant to this subsection, market squid may be taken for commercial purposes incidentally when engaged in fishing activities for other target species. Other requirements of this Section do not apply to incidental take. Incidentally-taken squid shall meet all of the following criteria:

(1) The volume of squid landed or possessed on a vessel shall not exceed 2 tons per trip.

(2) Market squid taken incidentally to other fisheries shall not exceed 10 percent of the total volume by weight of all fish landed or possessed on a vessel.

(m) Exemption for Live Bait. Squid taken for live bait purposes shall only be possessed for use as live bait or sold as live bait. Other requirements of this Section do not apply to take of live squid for bait, unless expressly specified.

Note: Authority cited: Sections 7078, 7701, 7708, ~~7923,~~ 8026, 8425 and 8429.5, Fish and Game Code. Reference: Sections 7701, 7708, ~~7923,~~ 8026, 8425, 8429.5, 8429.7, 12159 and 12160, Fish and Game Code.

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MARKET SQUID VESSEL LOGBOOK

BOOK #####

MAILING ADDRESS:
CALIFORNIA DEPARTMENT OF FISH & WILDLIFE
20 LOWER RAGSDALE DR, SUITE 100
MONTEREY, CA 93940

MARKET SQUID VESSEL LOGBOOK
IMPORTANT INSTRUCTIONS

1. Insert the folded flap between sets of pages to prevent duplicating on other pages.
2. Please return completed (white) copies to the California Department of Fish and Wildlife (CDFW) **on or before** the **10th** of the following month (20 Lower Ragsdale Dr., Suite 100, Monterey, CA 93940 or 4665 Lampson Ave, Suite C, Los Alamitos, CA 90720).
3. Additional logbooks and envelopes may be obtained through the CDFW office in Monterey or Los Alamitos at the above addresses.
4. The duplicate copy (yellow) is the property of the permittee and should remain in the logbook as a permanent fishing record.
5. Use a blue or black ballpoint pen. DO NOT use pencil or felt marker.
6. Write legibly.

PROFILE PAGE

1. Complete the Market Squid Vessel Profile page after reading the instructions.
2. Complete the Market Squid Vessel Profile page when starting each new logbook. Submit the pink copy with your next submission of log pages.

Definitions:

- **Vessel ID Number**: The registration number assigned by CDFW to a particular vessel.
- **Captain's ID Number**: The number assigned by CDFW to the fisherman. This number consists of an "L" and five numbers.
- **Attracting lights used**: Type (sodium, incandescent, metal halide, light emitting diode (LED), other), amount of light generated by individual bulb (circle W for watts or L for lumens), and number of total bulbs for each type. Please indicate if light is submerged by adding S to type (i.e. S-LED).
- **Vessel characteristics**: Boat length (feet), gross tonnage, and hold capacity (short tons) of the vessel.
- **Net type**: If applicable, circle appropriate response.
- **Net dimensions**: Depth and length of net in fathoms.
- **Mesh size**: Mesh size in inches.
- **Scoop capacity**: Enter the circumference (distance around the circle) and depth of bag in feet.
- **Electronics used**: Circle appropriate response.
- **Horsepower**: Both the main and auxiliary (generator) engines.
- **Fish hold's water system**: Circle appropriate response. RSW is the acronym for refrigerated sea water and CSW is the acronym for chilled sea water.
- **Crew members**: List names and CDFW license ID numbers.

LOG PAGE

1. Use **<u>one line per set</u>**.
2. Fishing activity must be recorded before fishing activity is complete.

Definitions:

- **Date**: Date of fishing activity.
- **Set Number**: Numerical order of sets. Set number should restart at the start of each new trip. If fishing with brail gear, record "B" instead of a set number and record one line per brail fishing location.
- **Set Time**: Time of start and end of set. Hours and minutes may be entered in 24-hour or 12-hour format. If using 12-hour format, circle AM or PM.
- **Set Position**: Latitude and longitude of set. Use degree decimal minutes to the hundredths place. Example: 34º 05.15' N, 120º 04.85' W.
- **SST**: Sea surface temperature in Fahrenheit.
- **Bottom Depth**: Depth at set location in fathoms.
- **Light Boat**: Enter name of light boat set upon. If no light boat was used, then leave blank.
- **Catch Estimate**: Enter your catch estimate for that set in short tons.
- **Market Order Limit**: Enter Y (Yes) or N (No) if your fishing was limited by your market.
- **Bycatch**: Species common name and amount in pounds.
- **Landing Receipt**: Enter landing receipt or receipt numbers if delivering to multiple receivers.
- **Comments**: List by date any anecdotal information such as equipment problems, interference from other boats, weather-related problems, day set activity, additional bycatch information, etc.

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State of California - Department of Fish and Wildlife
MARKET SQUID VESSEL LOGBOOK
DFW 149a (Rev. 05/01/15) Previously DFG 149a

LOG #

Market Squid Vessel Profile

Vessel Name_____

Vessel ID Number_____

Vessel Permit Number_____

Captain's Name_____

Captain's ID Number_____

Attracting Lights Used:

Type:	Light Generated:	Number:
_____	_____ W L (circle one)	_____
_____	_____ W L (circle one)	_____
_____	_____ W L (circle one)	_____

Vessel Characteristics:

Boat Length (ft) _____

Hold Capacity (st)_____

Gross Tonnage _____

Purse Seine / Drum Seine / Lampara / Brail Net (circle one)

Net Depth (fm) _____

Net Length (fm) _____

Mesh Size (in) _____

Electronics Used:

Side-scan Sonar: Yes No (circle one)

Fathometer: Yes No (circle one)

Other: _____

Horsepower:

Main Engine _____

Generator _____

If Brail, scoop capacity (ft): Circumference _____Depth _____Average lbs per scoop _____

Fish Hold's Water System (circle one): **Brine** **RSW** **Dry** **CSW (live)** **Other** (please specify) _____

Crew members:

Name	ID Number	Name	ID Number

Captain's Signature_____Date_____

Certified under penalty of perjury as true and correct

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State of California - Department of Fish and Wildlife

MARKET SQUID VESSEL LOGBOOK

DFW 149a (Rev. 05/01/15) Previously DFG 149a

LOG #

Vessel Name:_____ Vessel Permit Number:_____ Captain's Name:_____

Vessel ID Number:_____ Captain's ID Number:_____

Alpha Code	Date	Set Number (or B if using brail gear)	Set Time: hr:min AM or PM (circle one)		Set Position: **decimal minutes to hundredths place**				SST (°F)	Bottom Depth (fm)	Name of light boat set upon	Catch Estimate (Short Tons)	Was catch limited by market order? Y/N	Bycatch:		Landing Receipt(s)
					Latitude		Longitude									
			Start	End	Degree Ex. 34°	Minutes Ex. 05.15'	Degree Ex. 120°	Minutes Ex. 04.85'						Species	Amount (lbs)	
A			AM / PM	AM / PM												
B			AM / PM	AM / PM												
C			AM / PM	AM / PM												
D			AM / PM	AM / PM												
E			AM / PM	AM / PM												
F			AM / PM	AM / PM												
G			AM / PM	AM / PM												
H			AM / PM	AM / PM												

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Comments: List by date any anecdotal information such as additional bycatch information, equipment problems, interference from other boats, weather-related problems, day set activity, etc.

Captain's Signature_____ Date_____

Certified under penalty of perjury as true and correct

STATE OF CALIFORNIA
NATURAL RESOURCES AGENCY

MARKET SQUID VESSEL LOGBOOK

NOTICE TO INDIVIDUALS

(A) This information is being requested by:

THE STATE OF CALIFORNIA,
Department of Fish and Wildlife, Marine Region

(B) The official responsible for maintaining this information is:

Regional Manager, Marine Region
4665 Lampson Ave, Suite C, Los Alamitos, CA 90720

(C) Any person who owns and/or operates any vessel used to take squid shall complete and submit an accurate record of his/her squid fishing activities on forms provided by the Department. The authority to collect this information is granted pursuant to Fish and Game Code section 8026, and California Code of Regulations, Title 14, sections 149 and 190.

(D) It is mandatory to furnish all the information requested by the Department.

(E) The law authorizes penalties and permit/license suspension or revocation for failing to provide this information as stated in Fish and Game Code sections 8026 and 12002.

(F) Fisheries research and management are the principal purposes for which this information is to be used.

(G) Information from this form may be given “To a person, or to another agency where the transfer is necessary for the transferee agency to perform its constitutional or statutory duties, and the use is compatible with a purpose for which the information was collected” and “To a government entity when required by state or federal law” (Civil Code Section 1798.24, subdivisions (e) and (f)).

(H) An individual has a right of access to records containing their personal information maintained by the Department. Records may be accessed by contacting the official listed in Section (B) above.

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MARKET SQUID LIGHT/BRAIL BOAT LOGBOOK

BOOK #####

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MAILING ADDRESS:
CALIFORNIA DEPARTMENT OF FISH & WILDLIFE
20 LOWER RAGSDALE DR, SUITE 100
MONTEREY, CA 93940

MARKET SQUID LIGHT/BRAIL BOAT LOGBOOK
IMPORTANT INSTRUCTIONS

1. Insert the folded flap between sets of pages to prevent duplicating on other pages.
2. Please return completed (white) copies to the California Department of Fish and Wildlife (CDFW) **on or before** the **10th** of the following month (20 Lower Ragsdale Dr., Suite 100, Monterey, CA 93940 or 4665 Lampson Ave, Suite C, Los Alamitos, CA 90720).
3. Additional logbooks and envelopes may be obtained through the CDFW office in Monterey or Los Alamitos at the above addresses.
4. The duplicate copy (yellow) is the property of the permittee and should remain in the logbook as a permanent fishing record.
5. Use a blue or black ballpoint pen. DO NOT use pencil or felt marker.
6. Write legibly.

PROFILE PAGE

1. Complete the Market Squid Light/Brail Profile page after reading the instructions.
2. Complete the Market Squid Light/Brail Profile page when starting each new logbook. Submit the pink copy with your next submission of log pages.

Definitions:

- **Vessel ID Number**: The registration number assigned by CDFW to a particular vessel.
- **Captain's ID Number**: The number assigned by CDFW to the fisherman. This number consists of an "L" and five numbers.
- **Attracting lights used**: Type (sodium, incandescent, metal halide, light emitting diode (LED), other), amount of light generated by individual bulb (circle W for watts or L for lumens), and number of total bulbs for each type. Please indicate if light is for use underwater (submerged) by adding S to type (i.e. S-metal halide).
- **Vessel characteristics**: Boat length (feet), gross tonnage, and hold capacity (short tons) of the vessel.
- **Electronics used**: Circle appropriate response.
- **Horsepower**: Both the main and auxiliary (generator) engines.
- **Scoop capacity**: Enter the circumference (distance around the circle) and depth of bag in feet. Also include an estimate of average pounds of squid caught per scoop.
- **Fish hold's water system**: Circle appropriate response. RSW is the acronym for refrigerated sea water and CSW is the acronym for chilled sea water.
- **Crew members**: List names and CDFW license ID numbers.

LOG PAGE

1. Use only one line per day, unless you provided light for more than two seiners or fished in more than one location. Several fishing days, but no more than seven, may be recorded per page.
2. Fishing activity must be recorded before fishing activity is complete.

Definitions:

- **Date**: Date of fishing activity.
- **Location**: If fishing with brail gear enter latitude and longitude using degree decimal minutes to the hundredths place. Example: 34°05.15' N, 120° 04.85' W. If operating as a light boat, enter the CDFW block code that encompasses your location of fishing. If the CDFW block code is unknown enter your latitude and longitude. If you move to a new block record details on a new line.
- **Hours spent searching**: Hours spent metering for squid. This time also includes time spent holding locations for day sets. Only enter one value per date or one value for each location if you operated in multiple locations on the same date. Do not enter a unique value for each seiner if you provided light for more than one seiner.
- **Hours spent lighting**: Hours spent attempting to attract squid with lights. Only enter one value per date or one value for each location if you operated in multiple locations on the same date. Do not enter a unique value for each seiner if you provided light for more than one seiner.
- **Name of seiner that set squid**: Provide the name of the seiner that set squid on each line. If you lit for more than two seiners, use the next line.
- **Estimated total tons taken by each seiner:** Enter total short tons taken by each seiner. Use one line per seiner.
- **Estimated tonnage, if any, remaining after fishing is completed:** Was there any squid left? Enter amount in short tons. Only enter one value per date or one value for each location if you operate in multiple locations on the same date. Do not enter a unique value for each seiner if you provided light for more than one seiner.
- **Were birds present?** Y/N: Enter appropriate response.
- **Were mammals present?** Y/N: Enter appropriate response.
- **Time of brail fishing activity (brailing):** Time of start and end of brail fishing activity. Hours and minutes may be entered in 24-hour or 12-hour format. If using 12-hour format, circle AM or PM.
- **Bottom Depth:** Depth in fathoms to be completed if fishing by brail.
- **Amount sold to market:** Record amount of your vessel's brail caught squid sold to market in short tons.
- **Landing receipt #**: Enter landing receipt of your vessel's brail caught squid or receipt numbers if delivering to multiple receivers.
- **Amount for live bait:** Enter your vessel's live bait catch amount in pounds.
- **Bycatch:** Species common name and amount in pounds of your vessel's brail caught bycatch.
- **Comments:** List by date any anecdotal information such as additional bycatch information, equipment problems, interference from other boats, weather-related problems, day set activity, etc.

DRAFT

State of California - Department of Fish and Wildlife
MARKET SQUID LIGHT/BRAIL BOAT LOGBOOK
DFW 149b (Rev. 05/01/15) Previously DFG 149b

LOG#

Market Squid Light/Brail Boat Profile

Vessel Name:_____

Vessel ID Number:_____

Light or Brail Boat Permit Number:_____

Captain's Name:_____

Captain's ID Number:_____

Attracting Lights Used:

Type:	Light Generated:	Number:
_____	_____ W L (circle one)	_____
_____	_____ W L (circle one)	_____
_____	_____ W L (circle one)	_____

Vessel Characteristics:

Boat Length (ft):_____

Gross Tonnage:_____

Hold capacity (st):_____

Electronics:

Side-scan Sonar: Yes No (circle one)

Fathometer: Yes No (circle one)

Other: _____

Horsepower:

Main Engine _____

Generator _____

Scoop capacity: Circumference (ft)_____Depth (ft)_____Average lbs per scoop _____

Fish Hold's Water System (circle one): **Brine** **RSW** **Dry** **CSW (live)** **Other** (please specify) _____

Crew Members:

Name	ID Number

Captain's Signature:_____Date_____
Certified under penalty of perjury as true and correct

DRAFT

State of California - Department of Fish and Wildlife
MARKET SQUID LIGHT/BRAIL BOAT LOGBOOK
DFW 149b (Rev. 05/01/15) Previously DFG 149b

LOG #

Vessel Name:_____ Light or Brail Boat Permit Number:_____ Captain's Name:_____

Vessel ID Number:_____ Captain's ID Number:_____

Date	Location: For brail activity enter latitude and longitude using decimal minutes to hundredths place. Ex. 34° 05.15', 120° 04.85' / For light boat activity enter block code or lat/long if block code unknown.	Hours spent: Searching (includes day sets)	Hours spent: Lighting	Name of Seiner that set squid	Total tons (st) of squid caught by seiner	Estimated tonnage (st) remaining after fishing is completed	Were birds present? Y/N	Were mammals present? Y/N	**Your vessel's estimated BRAIL catch** Leave blank if you are a light boat permittee or a brail boat permittee operating solely as a light boat: Time of brailing: hr:min AM or PM (circle one) Start	End	Bottom depth (fm)	Amount sold to Market (short tons)	Landing receipt #	Amount for Live Bait (lbs)	Brail Bycatch: Species	Amount (lbs)
									AM/PM	AM/PM						
									AM/PM	AM/PM						
									AM/PM	AM/PM						
									AM/PM	AM/PM						
									AM/PM	AM/PM						
									AM/PM	AM/PM						
									AM/PM	AM/PM						

Comments: List by date any anecdotal information such as additional bycatch information, equipment problems, interference from other boats, weather-related problems, day set activity, etc.

Captain's Signature:_____ Date:_____

Certified under penalty of perjury as true and correct

DRAFT

STATE OF CALIFORNIA
NATURAL RESOURCES AGENCY

MARKET SQUID LIGHT/BRAIL BOAT LOGBOOK

NOTICE TO INDIVIDUALS

(A) This information is being requested by:

THE STATE OF CALIFORNIA,
Department of Fish and Wildlife, Marine Region

(B) The official responsible for maintaining this information is:

Regional Manager, Marine Region
4665 Lampson Ave, Suite C, Los Alamitos, CA 90720

(C) Any person who owns and/or operates any vessel used to take squid shall complete and submit an accurate record of his/her squid fishing activities on forms provided by the Department. The authority to collect this information is granted pursuant to Fish and Game Code section 8026, and California Code of Regulations, Title 14, sections 149 and 190.

(D) It is mandatory to furnish all the information requested by the Department.

(E) The law authorizes penalties and permit/license suspension or revocation for failing to provide this information as stated in Fish and Game Code sections 8026 and 12002.

(F) Fisheries research and management are the principal purposes for which this information is to be used.

(G) Information from this form may be given "To a person, or to another agency where the transfer is necessary for the transferee agency to perform its constitutional or statutory duties, and the use is compatible with a purpose for which the information was collected" and "To a government entity when required by state or federal law" (Civil Code Section 1798.24, subdivisions (e) and (f)).

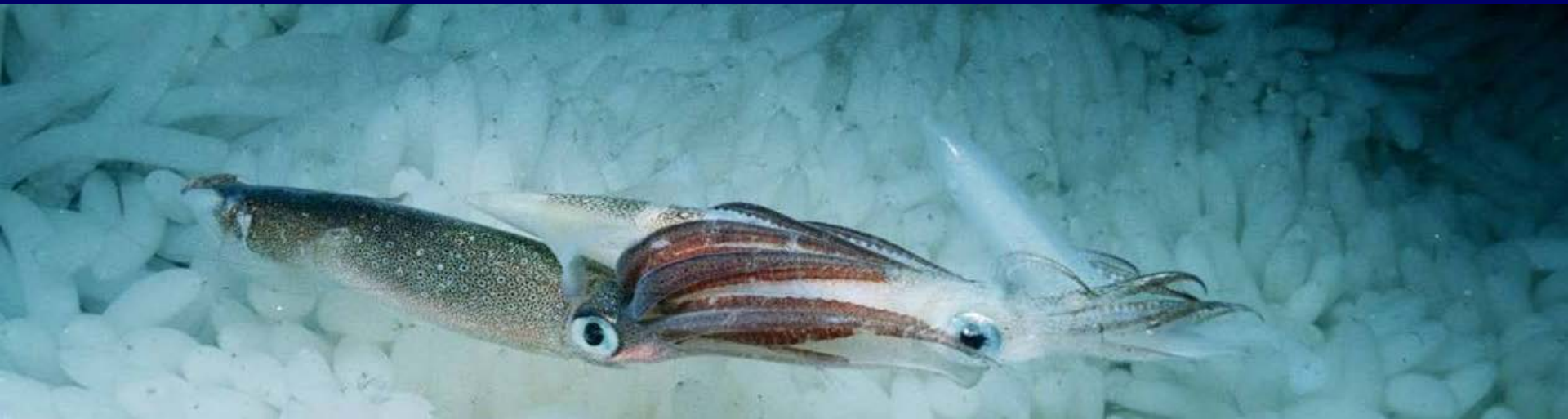
(H) An individual has a right of access to records containing their personal information maintained by the Department. Records may be accessed by contacting the official listed in Section (B) above.

DRAFT

Proposed Changes to Market Squid Logbook Regulations

Marine Region

Department of Fish and Wildlife



Proposed Changes to Market Squid Logbook Regulations (§149)

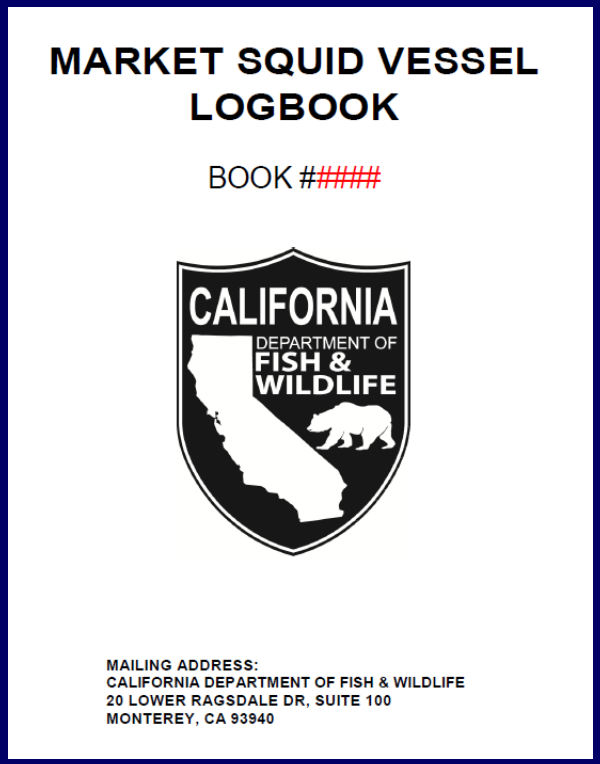
<u>Logbooks</u>

- Requesting authorization to publish notice of intent to amend commercial market squid logbook regulations.

<u>Lights</u>

- Complete additional scoping.
- Revisit potential changes at a later date.

Proposed Changes to Market Squid Logbook Regulations (§149)


MARKET SQUID VESSEL LOGBOOK

BOOK #####

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

MAILING ADDRESS:
CALIFORNIA DEPARTMENT OF FISH & WILDLIFE
20 LOWER RAGSDALE DR, SUITE 100
MONTEREY, CA 93940

<u>Logbooks</u>

Amend

- Subsection (e) of Section 149, Title 14, CCR to reflect the version numbers of updated market squid logbooks.
- Appendix A, Title 14, CCR with updated forms and instructions.

Logbooks

- **Logbooks updated to comply with Forms Management requirements**
- **Improve instructions**

- **Improve quality of data that are received by the Department**

Conclusion

- Request authorization to update logbook version numbers in Section 149, Title 14 CCR based on improved market squid logbooks.

<u>Timeline</u>

- June 2015, Mammoth Lakes – Notice Hearing
- October 2015, Los Angeles - Discussion/Adoption Hearing
- Early 2016 – Expected Implementation

Final Report of the Scientific Review Committee

Scientific review of the reference point thresholds prescribed in the draft Fishery Management Plan for California Spiny Lobster (*Panulirus interruptus*)

Convened by the California Ocean Science Trust

Supported by the California Ocean Protection Council and the California Ocean Science Trust

May 2015

CALIFORNIA OCEAN SCIENCE TRUST

Review Participants

CALIFORNIA OCEAN SCIENCE TRUST

California Ocean Science Trust is a boundary organization. We work across traditional boundaries, bringing together governments, scientists, and citizens to build trust and understanding in ocean and coastal science. We are an independent non-profit organization established by the California Ocean Resources Stewardship Act (CORSA) of 2000 to support managers and policymakers on the U.S. West Coast with sound science, and empower participation in the decisions that are shaping the future of our oceans.

Ocean Science Trust served as the independent appointing agency in alignment with the Procedural Guidelines for the California Department of Fish and Wildlife's Ad Hoc Independent Scientific Advisory Committees. Ocean Science Trust convened the review committee and designed and implemented a scientific review process that promoted objectivity, transparency, and scientific rigor (see Appendix C).

SCIENTIFIC REVIEW COMMITTEE

John Field (chair)
Research Fishery Biologist, Fisheries Ecology Division, Southwest Fisheries Science Center, National Marine Fisheries Service (NOAA)

Michel Comeau
Head of the Lobster Section, Department of Fisheries and Oceans Canada

Robert Muller
Assessment and Modeling, Florida Fish and Wildlife Conservation Commission, Florida Wildlife Research Institute

Pete Raimondi
Chair/Professor, Department of Ecology and Evolutionary Biology, University of California, Santa Cruz

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

The Mission of the Department of Fish and Wildlife is to manage California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

California Department of Fish and Wildlife staff were engaged throughout the review process. They delivered presentations to the review committee and supplied additional data, information, and feedback to Ocean Science Trust as necessary throughout the review process.

Travis Buck	Tom Mason
Julia Coates	Carlos Mireles
Kai Lampson	Anthony Shiao

The California Department of Fish and Wildlife Marine Region Program Manager, Tom Barnes, was the primary management contact for this review. California Wildlife Foundation was the grant manager for this project.

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Recommended citation: Final report of the scientific review committee, scientific review of the reference point thresholds prescribed in the draft Fishery Management Plan for California Spiny Lobster (*Panulirus interruptus*). California Ocean Science Trust, Oakland, CA. May, 2015.

Cover image: Ken Curtis

Background

Spiny lobster (*Panulirus interruptus*) populations support important commercial and recreational fisheries, and play a key role in the southern California kelp forest ecosystem. Over the last three years, the California Department of Fish and Wildlife (the Department) has developed a draft spiny lobster fishery management plan (FMP) to guide management of these fisheries in accordance with the Marine Life Management Act. An FMP assembles information, analyses, and management options, and serves as the vehicle for the Department to present a coherent package of information, and proposed regulatory and management measures to the California Fish and Game Commission (the Commission). The FMP becomes effective upon adoption by the Commission, following their public process for review and revision. Thus, it is important for the scientific underpinnings of the draft FMP to have undergone independent review prior to submission to the Commission.

The Department is committed to incorporating the best scientific information into management decisions. To this end, the Department approached the Ocean Science Trust to convene experts to conduct an assessment of key scientific and technical components within the FMP and supporting spawning potential ratio (SPR) cable model. Ocean Science Trust, an independent organization that works to advance independent science in management decisions, tailored this review to meet the science needs of the Department, and served as the appointed entity to design and coordinate all aspects of this review.

REVIEW SCOPE

Ocean Science Trust, in consideration of the management request, worked with the Department to develop a scope of review focusing on the scientific and technical underpinnings of the FMP and supporting materials. Thus, this was not a comprehensive review of the FMP, or the proposed approach to management contained therein. Rather, the central question of this review was:

Given the Department of Fish and Wildlife's available data streams and analysis techniques, are the technical components, models, and supporting documents that underpin the FMP scientifically sound and reasonable?

The review focused on the following components:

1. The three proposed reference point thresholds (i.e., catch, catch per unit effort (CPUE), and spawning potential ratio) that will serve as signals for when changes within the fishery may warrant management responses;
2. The underlying science that informed the decision to manage the fishery as a single stock;
3. The comprehensiveness of the data supporting the estimate of spiny lobster habitat contained within marine protected areas;
4. Estimates of stock productivity and its ability to support fishing (i.e., calculations for the lobster growth curves adopted in the Parrish Model for setting the spawning potential ratio threshold); and
5. The spawning potential ratio (SPR) model as presented in "DRAFT Report on the Cable-CDFW 1.0 Model and the Calculation of Spawning Potential Ratio" (cable model), including model assumptions, calculations, interpretation, and application of the model results in setting the SPR reference point threshold.

In addition to these specific sections of the FMP, reviewers were asked to identify priority research and monitoring gaps associated with the scientific and technical components of the FMP. Reviewers also provided recommendations for ways to work more closely with the academic community to collect and maintain the most up-to-date essential fishery information (EFI).

SUMMARY OF THE REVIEW PROCESS

This review took place from October 2014 – May 2015. Ocean Science Trust implemented a scientific review process[1] that sought to promote objectivity, transparency, candor, efficiency, and scientific rigor. A multidisciplinary, four-member review committee was assembled, representing international expertise in fisheries science and management, marine ecology, stock assessment, and modeling. Reviewer names remained anonymous until completion of this review to encourage candid feedback. Ocean Science Trust facilitated constructive interactions between reviewers and the Department through a series of remote meetings, where Department staff provided reviewers with the management context, presented an overview of the scientific and technical elements under review, and were available to answer reviewer's questions. In addition, Ocean Science Trust convened reviewers independently to allow the review committee to candidly discuss the review materials and conduct their assessment. Ocean Science Trust worked with the review committee to assemble and synthesize their written and verbal responses to guiding questions, as well as discussion from remote meetings into this final report. This report is publicly available on the Ocean Science Trust website[2].

PROJECT MATERIALS UNDER REVIEW

The following materials were provided by the Department to the review committee for scientific and technical review:

- Draft Spiny Lobster Fishery Management Plan, For Technical Review, 11/4/2014[3]
- Draft Report on the Cable-CDFW 1.0 Model and the Calculation of Spawning Potential Ratio
- Draft Spawning Potential Ratio Cable-CDFW 1.0 Model

Additional data and information were provided by the Department at the request of the review committee to assist with their assessment throughout the review process.

[1] Available at http://bit.ly/1Fd9A6X
[2] Available at http://bit.ly/1Fd9zA3
[3] Draft available on the Department of Fish and Wildlife website at http://bit.ly/1Fda254

Review and Recommendations

Foremost, the review committee valued the opportunity to provide independent scientific recommendations for consideration in management of the California spiny lobster fisheries. They acknowledged the extensive time and resources that went into the development of the FMP and supporting model by both the Department, the Lobster Advisory Committee, stakeholders, and outside experts, including modeler Dr. Richard Parrish. Reviewers appreciated the Department staff's constructive engagement throughout the course of the review, as well as their willingness to thoughtfully consider recommendations from this report. The Department produced an FMP that is user-friendly and readable by broad audiences, is well referenced, and incorporates the effects of no-take marine protected areas for the first time in a state-managed fishery. Reviewers noted that the FMP would complement the fairly robust management measures already in place.

This assessment is organized around the key focal points identified in the scope of review. These recommendations aim to improve the science supporting the proposed reference point thresholds prescribed in the draft FMP. Where possible, insight is provided on the implications of each recommendation.

The main recommendations concern the spawning potential ratio (SPR) cable model, several of which would need to be addressed before this model can provide a sound scientific basis for decision-making. Additional scientific guidance and considerations are included that would produce a more scientifically robust FMP, as well as longer-term recommendations, data and research needs that would strengthen the science contained within the model and FMP and its ability to inform management as new information and analyses become available.

This FMP is the first instance where state fisheries managers in California are employing a technical model (aside from a formal stock assessment) to inform the development of a harvest control rule. As such, reviewers thought it valuable to close the review with some insight into how scientific models are scoped, considered, and reviewed as FMPs are developed for other state fisheries in the future.

1. EVALUATION OF THE PROPOSED REFERENCE POINT THRESHOLDS

Three proposed quantitative reference points and associated thresholds – spawning potential ratio, catch, and catch per unit effort (CPUE) – are meant to serve as metrics to assess the state of the lobster fishery and stock. The FMP states that whenever a stock reaches a threshold reference point, resource managers must investigate the cause and potentially provide a response. The Department has to review the catch, catch per unit effort, and update the spawning potential ratio on an annual basis. This process is designed to monitor the fishery and its stock in order to prevent any of the metrics from reaching a threshold.

Below are the scientific review committee's recommendations for each reference point. For sections 1.1 (SPR) and 1.2 (catch, CPUE), recommendations are divided into those that reviewers suggest the Department address before adopting the FMP, and those that are longer-term considerations, which can be addressed after adoption of the FMP.

1.1 Spawning Potential Ratio (SPR) Cable Model and the SPR Reference Point

Much of the review focused on the SPR cable model, since it is the main measure of the spiny lobster spawning biomass structure and the only biological reference point in the FMP (i.e., it integrates information and assumptions about lobster growth, reproduction, and mortality). The model, starting with 1,000 recruits, calculates an equilibrium SPR value – a ratio of the number of eggs produced by the fished population over the number of eggs produced by the unfished population. Being an equilibrium model, it does not track cohorts or size trends over time, but does provide relative abundance estimates for the fixed number of recruits. Therefore, this SPR estimate is used to estimate an annual fishing mortality rate specific to a given year's observed mean size, with no temporal connection among the annual estimates. The FMP advises that when the $SPR_{CURRENT}$ falls below the "stable and productive" reference period between 2000-2010 ($SPR_{THRESHOLD}$, based on the average SPR value during this period), the Department is required to investigate the underlying cause and potentially provide a management response for the Commission to consider. The model also evaluates the effects that marine protected areas (MPAs) may have on the calculated SPR value of the lobster stock.

During the course of the review, reviewers were provided with three iterations of the SPR model. The model was originally developed by Dr. Richard Parrish, and underwent further development and revisions by the Department. The final version (referred to here as the cable model) is the version intended for use in the management of the fishery, and was the main focus of this assessment. The cable model includes the following revisions from the previous iterations:

1. a new growth model (i.e., changing the model from a von Bertalanffy growth model to a newly developed model)
2. changes to initial time step (i.e., size, age, season)

The draft FMP provided to reviewers for their work was developed based on the original model and did not reflect these revisions. The reviewers were instructed to assume that the draft FMP would be revised to reflect the most recent cable model. Additionally, following initial technical discussions between Department staff and the reviewers, the Department agreed to remove a prescribed value for the SPR threshold in order to allow for the ability to continually improve the model without amending the FMP.

1.1.1 Key Recommendations for Securing a Management-Ready SPR Model

Reviewers agreed that the cable model requires essential revisions before it can provide a scientific basis for management of the lobster fishery, but that these revisions are likely achievable before the FMP is adopted. In the longer term, more substantive data collection and research initiatives to better inform a model comparable to the current model, or an alternative modeling approach, are identified as priorities. Below are the key recommendations for securing a management-ready SPR model, organized around thematic areas.

Growth Model

- ***Rely on the von Bertalanffy growth modeling methods until the newly developed growth model can be robustly validated.***

  The primary revision to the SPR model by the Department was the replacement of a von Bertalanffy growth model, with a new set of Gaussian 4-parameter growth curves that were developed by Department staff. These were based on raw data from three tag-recapture studies in order to estimate male and female lobster growth rates. Growth curves are central to determining a stock's ability to replenish itself. Reviewers acknowledged the inherent difficulties in obtaining reliable growth rates for crustaceans, such as lobsters, that grow through molting. Though von Bertalanffy growth models are widely used and accepted, they represent a generic growth response; the Department examined multiple growth models in an attempt to employ an alternative that better represented the growth of *P. interruptus*.

The reviewer's main concern with the current SPR cable model is with the application of the new Gaussian growth curves. While reviewers recognized that the Gaussian 4-parameter curves may better fit the data, they had concerns that these growth models have not been subject to rigorous scientific discussion. The results of the Gaussian curves are not consistent with the existing literature regarding the growth patterns of lobsters in similar ecosystems, and lead to potentially unrealistic SPR model behavior and results. In particular, they lead to growth rate estimates that are very slow such that mature individuals can reproduce many times prior to being vulnerable to full fishing mortality. Slow growth rates in this particular SPR model implementation translate into lower harvest rates and a reduced impact of fishing on population reproductive output; the slower you make growth, the lower the estimated relative exploitation rate is in the SPR model. This is contrary to what is typically understood about growth rates and stock productivity. The fact that this model estimates a "snapshot" of relative exploitation rate in a given year with assumed constant recruitment, rather than tracking exploitation and cohort strength (and potential feedback to recruitment) over time contributes to this somewhat counter-intuitive result, but the unusually slow growth is the primary driver. The net effect of the Gaussian growth model as applied in SPR cable model is that fishing mortality of most legal lobsters has a reduced impact on the estimated SPR, relative to SPR estimation based on the von Bertalanffy growth model.

von Bertalanffy growth expands the resolution of the SPR model compared to the Gaussian growth curves

These Gaussian growth curves are not necessarily incorrect – in fact, they may well be a more accurate representation of lobster growth – and should be improved with additional research. Reviewers commend the Department for making strides to move beyond the standard growth model. Further studies showing that the approach has some precedent with crustaceans and more investigation of the underlying data is necessary before the Gaussian growth model can be applied with confidence. If and when an alternative growth model is considered to be sufficiently developed to incorporate into the SPR model, the Department should consider whether that model is consistent with growth models of lobsters in other (similar) ecoystems, and ensure that sensitivity analyses are conducted to evaluate the effects of any new growth relationships on SPR model performance.

With current understanding, the von Bertalanffy growth model is more appropriate for a relative metric of exploitation as it is more responsive to changes in exploitation, produces results that are comparable to methods used elsewhere for similar fisheries, and expands the resolution of the SPR model (see Appendix A for further analyses conducted by reviewers). Thus, reviewers recommend that the Department rely on the more standard and widely used von Bertalanffy growth modeling methods, until the newer Gaussian curves can be robustly validated.

Longer-term considerations are included in section 1.1.2, including the need to routinely collect length or other size compositional data (length or weight distributions) and information on actual selectivity and maturity curves, which would provide the basis for a more robust SPR model (e.g., more accurate estimates of fishing mortality). Reviewers recognized that there is inherent variability in the growth data at small sizes using the available tag-recapture studies, and provide some recommendations that may increase comfort with new Gaussian growth curves based on these data.

- ***Use SPR with caution at high exploitation rates.***

It is also important to note that the SPR cable model (with either growth model applied, although the problem is exacerbated at slower growth rates) becomes uninformative at very high exploitation rates (Appendix A). This is partially a result of the confounding of the maturity and selectivity curves described below. This constraint should be recognized explicitly in the SPR model documentation and the FMP, and the Department should be cautious when interpreting results at high exploitation rates.

- ***Reconsider some of the tag-recapture data that were removed from the growth models.***

  The growth models are based on a limited data set, from which some outliers and negative values were removed (per Department presentation to review committee). Juveniles can often show high growth rates in short timeframes, thus some of the data identified and removed might actually be informative. In addition, the Department should consider making the "negative growth" data points zero instead of removing them from the analyses if they are believed to be measurement error. Reconsidering how these data points are treated may reduce variability at small lobster sizes and lead to more accurate estimates of growth.

Model Functionality

- ***Update the vulnerability relationship.***

  In the cable model, the vulnerability function has precisely the same coefficients as maturity. If this is a true coincidence, it should be explained. However, recent data on female lobsters from Hovel et al. (2015) and Kay (2011) indicate that female lobsters may be reproductive at smaller sizes than previously thought. The Department should verify, and if appropriate, update this function in the cable model. In addition, the current function in the cable model is for the commercial fishery that uses traps. Traps have an upper limit based on the throat size of the trap while there is no upper limit in the recreational fishery. Therefore, there should be a separate vulnerability relationship for the recreational fishery in any future model that can account for recreational catch.

- ***Revisit the natural mortality function.***

  The natural mortality function assumes that natural mortality decreases as lobsters grow; however within the current cable model, a minimum rate occurs at an age of 17.92 years and then the rate increases again. This pattern of senescence is unusual, and the Department should provide additional references or data to support the assumption that older, larger lobsters experience higher natural mortality. If the proportion of 'plastered females' (i.e., female lobsters that have mated) is lower at larger sizes, suggesting that large females are not contributing as much to SPR, those data should be presented.

- ***Explain the ramifications of SPR being independent year to year.***

  Each model run begins with exactly 1,000 larvae, and ignores variable and episodic recruitment, and the relationship between spawning biomass and recruitment. The model also assumes constant carrying capacity and a constant function for density dependence, among other considerations. These limitations should be made more explicit in the FMP and model report.

Sensitivity Analyses

- ***Make greater use of sensitivity analyses in explaining the model.***

  Sensitivity analyses are important for understanding the impacts of a model's input variables. They can help identify parameters that are likely to have no effect on the output (and could potentially be removed), as well as variables that have a large effect (where attention should be focused on ways to reduce uncertainty around these values/inputs). The Department should conduct explicit sensitivity analyses each time the SPR cable model is revised, and make this information available in the accompanying report to provide additional credibility to the reasoning behind such revisions. Standard practice is to double and halve the variable of interest and observe the impact to the outputs. The Department should consider assembling and formally communicating the error and uncertainty associated with the cable model results.

1.1.2 Longer-Term Considerations for the SPR Model

The review scope charged reviewers with conducting an assessment of the SPR model based on the Department's currently available data streams that would not require additional information or research. However, the model may benefit considerably from and be more robust as a result of addressing the following longer-term recommendations after adoption of the FMP.

Research Needs

- ***Explore alternative methods to estimate lobster growth.***

  Novel methods for age validation and improved growth estimation continue to emerge and should be explored, either by the Department or by academic and other independent research institutions. For example, direct methods of growth and age determination are now possible for crustaceans by measurements of annual molt-independent growth bands. Detection of growth bands in calcified regions of the eyestalk or gastric mill using the cold cure epoxy resin technique has been reported for cold-water shrimps (*Sclerocrangon boreas* and *Pandalus borealis*), snow crab (*Chionoecetes opilio*) and American lobster (*Homarus americanus*) (Kilada et al. 2012). A similar technique could be used to better estimate growth for the California spiny lobster (even on a spatially explicit basis), and perhaps elaborate or modify the 2011 stock assessment model to include an age-based parameter. Identifying these as key research priorities in the FMP may incentivize outside researchers and funders to pursue this research.

- ***Explore additional technical models that can account for variable recruitment.***

  Given that lobster recruitment is likely highly variable and episodic, a key longer-term research objective should be the development of a more sophisticated modeling approach that can track cohorts over time.

- ***Develop a sampling program to collect individual lobster length or weight composition data from both sectors of the fishery.***

  Estimates of fishing mortality used to obtain a corresponding SPR value each year are currently determined using average weight data from the commercial sector. The relevant parameters are derived using an extrapolation, linking logbook data to fish ticket data. These estimates would be greatly improved by a program in which actual length or weight measurements (by individual) could be collected. The sampling program needs to include the recreational sector as well because it accounts for approximately 30% of the landings and their vulnerable sizes may differ from commercial traps. Such data would be helpful in informing more sophisticated modeling approaches (e.g., that track cohorts over time) in the longer-term as well.

- ***Prioritize obtaining intermediate recapture data, which could be useful for better understanding the dynamics of lobster growth rates.***

  While alternative methods to estimate growth are ultimately necessary, reviewers provided a suggestion that may improve upon the existing estimates in the near term.

  The growth curves were developed from data sets with gaps at important size ranges. Tag-recapture data gaps exist between the Engle (1979) and Hovel et al. (2015) data sets, in the 30 mm and 55 mm size classes. Currently, juvenile data must be extrapolated out in any growth curve model. Additional data would be valuable in "filling in" the points between data sets for a more accurate estimate of California spiny lobster growth.

Model Functionality

- ***Develop a function or method to incorporate recreational catch into the model.***

  Recreational catch is a substantial portion of overall catch and is not accounted for in the SPR model. This sector is potentially harvesting larger lobsters, thus, the vulnerability to fishing differs between the recreational and commercial sectors. It is important to parse out the proportion of the spawning potential coming from larger individuals. If this is the case, the vulnerability curve applied in the SPR cable model for the recreational sector should not be dome-shaped, but rather should be asymptotic, and there may be other facets of the recreational fishery of significance in accurately assessing SPR.

- ***Revisit the SPR model as MPAs reach their full maturity.***

  The SPR cable model assumption that South Coast MPAs have reached full maturity (thus, are having a threshold impact on the fishery) is unlikely given the MPAs are newly established. A number of factors will differ as MPAs reach full maturity, including the possibility of increased density dependence which could affect movement and reproduction as well as that spawning stock (given growth curves) may not yet be optimized through size and density. In other words, the current SPR model inputs may be over- or underestimating the effects of MPAs.

- ***Formalize a process to review, revise, update, and evaluate the SPR model and its effectiveness in meeting management goals as new data, information, or analyses become available.***

  Models like SPR will require continual refinement as new information and data are obtained. Many such improvements can be accomplished within this FMP framework. The reviewers commend the Department for removing a prescribed SPR threshold from the language of the draft FMP. This allows the ability to recalculate an appropriate threshold as the model is improved rather than needing to delay implementing these changes by waiting for the FMP to be formally amended. It would be valuable to formalize a process for considering revisions to the model – which may have substantial implications for the SPR outputs – as changes and updates are made. Reviewers recommend convening fishery managers and biologists with independent experts to evaluate the input data, coding, and effectiveness of the model at regular intervals.

1.2 Catch- and CPUE-based Reference Points

As noted previously, the process of reviewing current seasonal catch and CPUE data should permit the Department to monitor the fishery and its stock, and prevent any of the measures from reaching a threshold. However, reviewer consensus is that the Catch and CPUE-based reference points are not very robust or sensitive to picking up trends or slow declines. There is concern that "sliding" calculations will rarely exceed the established thresholds. Even when a threshold is exceeded, no specific management responses are required, thus these measures act more as indicators than as reference points. Section 1.2.1 contains key recommendations that would allow for a more robust method to monitor the condition or trajectory of the fishery, and should be addressed before adopting the FMP. Section 1.2.2 includes recommendations that could be addressed in the longer-term.

1.2.1 Key Recommendations for Catch and CPUE-based Reference Points

- ***Describe the catch and CPUE thresholds as "fishery indicators" instead of reference points.***

  A more informative approach to identifying declines in the fishery may be to present the proposed catch and CPUE reference points as indicators of fishery condition, and set the thresholds to more conservative levels. This could provide a more sensitive measure (i.e., reference thresholds would be crossed more easily, making for earlier "warning signs") and allow the Department to elicit useful scientific information for interpreting any changes observed in SPR.

  Reviewers conducted some additional analyses to explore the sensitivity of the threshold to detecting changes in the fishery (see Appendix B for a description of the full method). They compared California's proposed approach to a method currently under development for the American lobster (*Homarus americanus*) in Canada. In 2014, Canada established a reference point for the American lobster using commercial catch based on the Precautionary Approach (PA) for the southern Gulf of St. Lawrence fisheries. Employing the PA on a 123-year long data series, American lobster landings were below an upper stock reference point 85 times (Appendix B, Figure 1). However, applying the California spiny lobster approach to the same American lobster data revealed that California's proposed 0.8 catch-based reference point would only be exceeded two times (Appendix B, Figure 2), indicating it may not be a very sensitive measure for detecting fishery declines.

  Reviewers then applied Canada's Precautionary Approach to the California spiny lobster commercial landings data (Appendix B, Figure 3). Based on the PA and using a three year running average for landings, California spiny lobster commercial landings would have dropped below an upper stock reference point 31 times between 1935 and 2013, compared to 11 times as indicated in the draft FMP using the current 0.8 catch-based reference point (FMP Figure 4-6).

Based on these preliminary analyses, the 0.8 thresholds are not very sensitive to picking up trends in the fishery. If catch and CPUE data were used as contextual information for interpreting SPR, the thresholds could be set to more conservative levels to allow for greater sensitivity to detect fishery declines.

Another approach for detecting trends would be to report both a static number for $CATCH_{threshold}$ and $CPUE_{threshold}$ in addition to the moving averages, along with a discussion of the pros and cons of each method and what information they can provide.

- ***Clarify rationale for the use of 0.8 thresholds prescribed in the FMP.***

  The FMP should provide more clarity about how the thresholds were derived. They appear to be derived from the Hilborn 2010 citation referenced in the FMP. That study made the point that a broad range of relative abundance levels are typically associated with a more narrow range of relative yield (e.g., most give 80% or more of theoretical maximum), such that declines below 80% of the theoretical maximum could indicate substantial stock declines (if not driven by declines in effort or markets). This is an important aspect of the Catch and CPUE component, and should be better explained in the text.

- ***Report the CPUE statistic in mass per unit effort.***

  The current approach to calculating the CPUE statistic in the FMP is in numbers of individual lobster, not total weight of catch. Using weight (linked to fish tickets) may be more appropriate and is a more typical metric used in such fisheries.

- ***Include greater discussion of the reliability of recreational catch estimates.***

  Recreational catches are a substantial portion of the total catch for spiny lobsters, but seem to have a different trajectory, and one might expect trends to vary from commercial trends in the future as well. The Department should discuss the uncertainty around these recreational catch estimates in greater detail, and clarify whether they were adjusted or tuned to account for non- or under-reporting. Understanding the magnitude and significance of recreational catch is key in considering control rules.

1.2.2 Longer-Term Considerations for Catch and CPUE Data

Again, the review scope charged reviewers with conducting an assessment of the existing reference points and associated thresholds. However, the model may benefit considerably from, and be more robust as a result of addressing the following longer-term recommendations.

- ***Explore other technical models to obtain additional or alternative biological reference points that account for inter-annual variability in recruitment and other variables.***

  The Department could consider estimating the annual fishing mortality rates with a modified Delury depletion model (González-Yáñez et al. 2006, Puga et al. 2013) rather than the moving average approaches for catch and CPUE from average size used in the FMP. A Delury model includes the total numerical catch, the effort and the index of abundance in number (CPUE) as input data, which also takes into account inter-annual variability in recruitment. This approach would allow for both the commercial and recreational sectors to be modeled and there are extensions of the model that include a stock-recruit relationship for obtaining biological reference points. If size composition data become available in the future, the Department may also want to consider a more robust population dynamics analysis similar to one used for Australian southern rock lobsters (*Jasus edwardsii*) (Punt and Kennedy 1997). Additional age-structured analyses (Muller et al. 1997) or yield or egg production models that account for individual variability in growth (Fogarty and Idoine, 1988) may also be informative and should be explored further.

- ***Standardize commercial and recreational catch data to the same spatial reference points.***

  Commercial and recreational fishermen report location at different spatial scales. In comparing Figures 2-3 and 2-10 in the FMP, it appears that commercial fishermen report by Department of Fish and Wildlife block, while recreational fishermen may report by various specific locations (e.g., each of the Channel Islands has a single location code). This discrepancy will confound comparisons in evaluating questions such as the extent of spatial overlap in the commercial and recreational fisheries (e.g., line 825-26 in the FMP).

2. SCIENCE SUPPORTING THE DECISION TO MANAGE AS A SINGLE-STOCK

The FMP provides evidence to suggest that California spiny lobster larvae are well mixed throughout the Southern California Bight ("…complete population mixing due to the species' protracted larval phase"). Accordingly, the Department proposes considering the entire lobster stock within the U.S. border with one spawning potential ratio (SPR) value and threshold. However, Department data show that individuals in the northern Channel Islands are notably larger than the minimum legal size, while lobsters in the south are generally caught very close to the legal size, suggesting northern lobsters participate in more spawning seasons than southern lobsters before capture.

Reviewer's evaluation of the literature and existing research on the population structure of California spiny lobster suggests there is some potential for localized recruitment, and that the species does not maintain a single homogenous population despite the extended pelagic larval duration (Iacchei et al. 2013). However, reviewers recognize that the decision on single-stock management must take into account social, economic, and other factors in addition to the science. It is ultimately up to the Fish and Game Commission to determine the most appropriate method to manage the stock.

- ***Assess and report any spatially explicit differences between regions of the fishery.***

  Available data suggests there are clear regional differences in size distribution, catch, timing of catch, and effort – several of which are meaningful to the calculation of SPR and to determining how it varies in space and time. There is also evidence that growth and reproduction differ spatially, which could lead to spatially structured source-sink dynamics that may interact with fishing in a way inconsistent with single stock

predictions. While lobsters have an extended larval period with extreme dispersal potential (which could lead to assumptions of complete larval mixing), studies in other lobster species suggest substantial localized recruitment (Iacchei et al. 2013).

Reviewers recommend reporting any spatial differences among regions of the fishery to assist decision-makers with parsing out trends in catch and life history traits across the region, and assess whether current harvest control rules are adequately meeting management goals.

Reporting spatial differences among regions of the fishery can help decision-makers parse out trends in catch and life history traits

- ***Interactions with the Mexican spiny lobster stock should be considered and discussed in greater detail throughout the FMP.***

The reviewers expressed concern about the decision to neglect potential interactions between California and Mexico lobster populations. Given how the biology and management of Mexico's portion of the stock has implications for the entire range of the species, the FMP should include discussion of the potential uncertainty in SPR calculations associated with neglecting potential contributions from the south.

For example, regardless of the genetic structure of California spiny lobster, if the larval pool for California's population includes a large contribution from the Mexican portion of the stock, the actual SPR may be insensitive to management actions in California. The Department should discuss uncertainty around larval transport and reproductive interactions between California and Mexico's lobster populations. This should include a more comprehensive review of the literature (e.g., bolstering literature citations supporting the idea that stock is, or is not, well mixed).

- ***Prioritize longer-term research needs relating to regional differences in the species' biological parameters.***

The Department should prioritize collection of data aimed at better understanding lobster population genetics, plankton connectivity modeling, and the benthic stage. This could provide greater insight into source and sink populations, interactions with Mexican spiny lobster populations, and how management in California will affect the population.

Evidence from multiple lobster fisheries suggests local recruitment processes are possible. A recent microsatellite and mitochondrial DNA study in California spiny lobster suggests that the genetic structure of the *P. interruptus* exhibits genetic patchiness (Iacchei et al. 2013). The species does not maintain a single homogenous population, despite the species' 240-to 330-day pelagic larval duration. Instead, these lobsters appear to either have substantial localized recruitment or maintain planktonic larval cohesiveness whereby siblings more likely settle together than disperse across sites. However, DNA analysis in the Caribbean lobster (*P. argus*) suggest that populations of this spiny lobster are highly interconnected throughout its range, with a single genetic stock structure (Truelove et al. 2014, Lipcius and Cobb 1994; Silberman and Walsh 1994), except for a few sites where self-recruitment is enhanced by persistent offshore gyres. Lastly, a genetic study in the American lobster *(Homarus americanus*) indicated a genetic homogeneity of the northern region of the lobster population (suggesting a single genetic stock) within the Gulf of St. Lawrence (Kenchington et al. 2009). However, a larval transport model for this species also showed an extensive pelagic connectivity with some level of local recruitment (Chassé and Miller 2010) and no physical features that restrict benthic stage exchanges (Comeau and Savoie 2002).

Research suggests California spiny lobster populations exhibit localized recruitment

3. ESTIMATE OF LOBSTER HABITAT CONTAINED WITHIN MARINE PROTECTED AREAS

The FMP factors in the effects of California's network of MPAs by including them as a component of the fishing mortality calculation in the SPR cable model. The model includes an estimate that 14.6% of all available lobster habitat is protected by MPAs. This is based on available hard-bottom habitat data, augmented by proxy information where suitable bottom-type data are not available, for all the areas that comprise lobster habitat. Only areas that prohibit both recreational and commercial take were used for this calculation. In the near term, reviewers would like to see additional discussion in the FMP of the data sources used, and going forward, refinements to these estimates as the model is improved. Given other uncertainties in the spatial analyses, reviewers suggested that an estimate of 15% is likely adequate.

- ***Provide greater discussion of the data sources used to estimate suitable lobster habitat.***

  Reviewers acknowledge the rigor of the hard bottom data set used to generate the estimate, however the Department should provide more clarity on the locations where information was not available from this data set. It would also be informative to report a rough percent of unmapped habitat and percent of the estimate that was calculated using kelp canopy.

- ***Continue to refine the MPA estimate as new information becomes available.***

  The data used to estimate lobster habitat contain critical data gaps within the shallow nearshore regions (typically 10-15 meter depths) where remote sensing techniques are generally infeasible (known as the "white zone"). New research is providing better information to bridge these data gaps.

  Ongoing research through UC Santa Cruz, the California Department of Fish and Wildlife (staff contact: Paulo Serpa), and Ocean Science Trust is making progress on estimating sand versus rocky habitats across the State within this white zone. The first stage has been completed in the North Central coast and may be expanded statewide over the coming years, and could potentially provide an additional data source to incorporate into the Department's MPA estimate. The Seafloor Mapping Lab at California State University, Monterey Bay developed a shallow water mapping vessel, the R/V Kelp Fly, uniquely able to map the white zone. As these new data sources become available, the Department should include them as refinements to the cable model. The Department should also explore the contribution of habitat from breakwaters and artificial jetties.

- ***Consider developing a function or method to consider actual marine protected area sizes in the SPR cable model.***

  The SPR cable model makes coarse assumptions about the size and spacing of MPAs within the lobster range. The actual values of these parameters are well known, and accounting for California's actual MPA sizes and spacing – which differ regionally – could have implications for regional estimates of vulnerability because of the assumptions of movement that interact with the size and location of MPAs.

4. RESEARCH AND MONITORING

- ***Continue to update and prioritize research and data needs in the FMP.***

  The FMP includes Table 5-1, a prioritized list of research and data needs. Throughout this report, reviewers have identified additional research and data needs that would support more robust management of the fishery (some of which parallel those noted in the FMP). Additional recommendations from this review should be incorporated in the table as well. These science needs could provide further impetus for collecting the information identified and prioritized. A resource with up-to-date research and monitoring needs

provides independent researchers (and potential funders), with the basis for assessing the applicability of given research or other proposals to spiny lobster management and/or state information needs. The Department should continue to update this prioritization and guidance.

5. ADDITIONAL RECOMMENDATIONS

This section contains additional recommendations reviewers considered important, but were not clearly outlined in the formal scope of review.

- ***The harvest control rule matrix should include predetermined management options.***

  While reviewers recognized that this recommendation might be outside of the review scope, they agreed that scientific recommendations are most successful when they are accompanied by predetermined management actions. The lack of pre-determined management response options when one or more of the management thresholds are exceeded has the potential for inaction if the indices or data suggest there are troubling in the fishery. Table 4-2 in the draft FMP lists the suggested management response sequence, including four scenarios in which "No response is required," and another four in which a response is required. However, the required response in these scenarios is an investigation of underlying causes and confirmation with multiple models and approaches; if management action is required, the FMP guidance is to "tailor management response to prevailing conditions." The reviewers found these requirements vague.

  One of the key benefits of pre-specified harvest control rules is a higher certainty of the actions that will be taken when reference points are exceeded. This allows models to be used to evaluate the effectiveness of these actions to restore the fishery to the desired condition.

  Other fisheries that have used SPR for developing harvest control rules may provide good resources for identifying appropriate management responses to thresholds that have been exceeded. Consider supplementing FMP Table 4-1 (summary of SPR thresholds for other lobster fisheries) with a discussion of the management response are in those various management scenarios, as well as whether any of those fisheries also include target SPR rates.

- ***Clarify the information required for setting total allowable catch (TAC).***

  Lines 1964-1965 state that "Creating a TAC for the CA lobster fishery would likely require the Department to estimate the total biomass of the stock…". This is not necessarily true. For example the Market Squid fisheries established a TAC based on historical high catch levels in the absolute absence of total biomass estimates or idealized CPUEs. For many groundfish and other exploited fishes, a common practice in the absence of a quantitative guidance for stocks or stock complexes is to set a TAC at some fraction (e.g., 0.5, 0.75) of the peak historical catch. Any TAC that might be implemented should have a rationale, but it does not mean it requires a sophisticated model.

Looking Forward: Considerations for developing scientific models for state fishery management plans

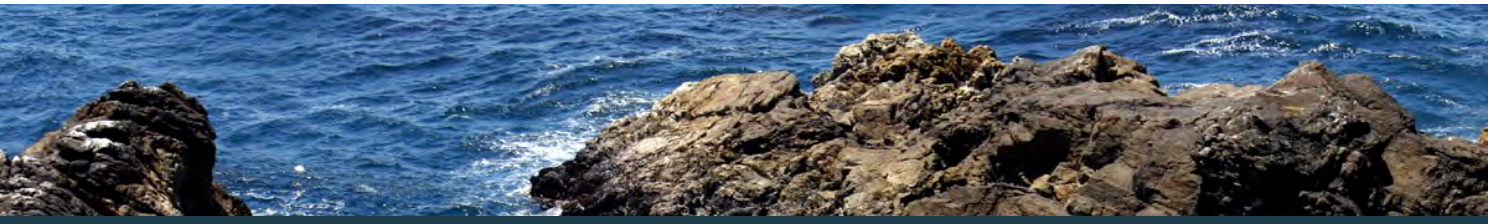
The California spiny lobster FMP represents one of the first examples of a state fishery management plan including the use of a technical model to obtain harvest control rules. The experts who participated in this review have experience developing and using fisheries models at the federal and international levels, and thought it valuable to provide insight into processes employed elsewhere.

When considering the development and use of other technical models going forward, the Department should ensure that the plan for producing the science is decoupled from any management concerns. This will include scoping the objectives, approaches, reporting requirements, and responsibilities of various participants in advance. Model development should take place from a position of academic freedom focused on developing the best model, given the resources and data. The Department should ensure the process is inclusive and transparent from the outset.

Reviewers also suggest decoupling the review of technical models from review of the FMP that such models inform. Future model reviewers should have the responsibility of ensuring that the models represent the best available science and the most robust methods. This review committee acknowledges that ideally an in-person, multi-day review workshop with the model development team would allow more detailed technical discussion and model improvement. It is advantageous to have several days to review, so that modelers can be given "homework" on sensitivity tests or alternative analyses that come up during the review and report back. Any future review team should include scientists from outside the region and fishery, and if possible, international expertise. A goal should be to ensure that the model is clearly understandable to those with no background in the particular fishery under consideration. Only models that have been accepted by reviewers as the best available science are advanced to managers. This way, managers can make recommendations and develop harvest control rules based on a model that has been independently recognized as scientifically rigorous.

As noted in this report, models like SPR will require continual refinement and review to ensure they are effectively meeting management goals. Formalizing a process to periodically review the model coding and configuration, and incorporate recent information is recommended. Groups like SouthEast Data, Assessment and Review[1] (SEDAR) and NOAA PFMC Stock Assessment Review (STAR) Panels may provide informative examples of successful approaches that vary in detail and level of time and analyses required.

[1] More information at http://sedarweb.org/



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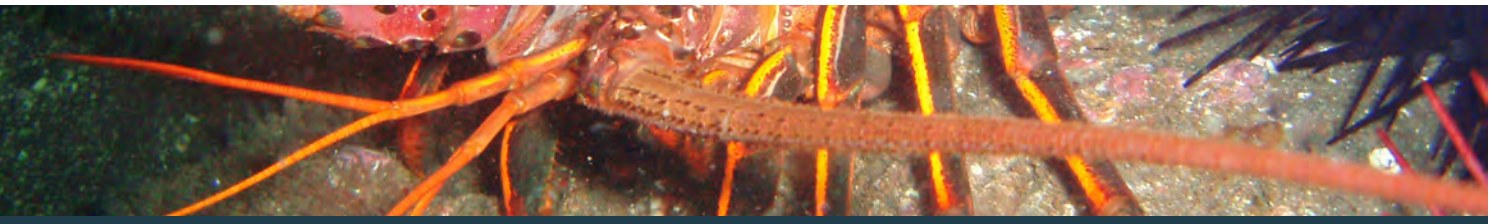


Appendices

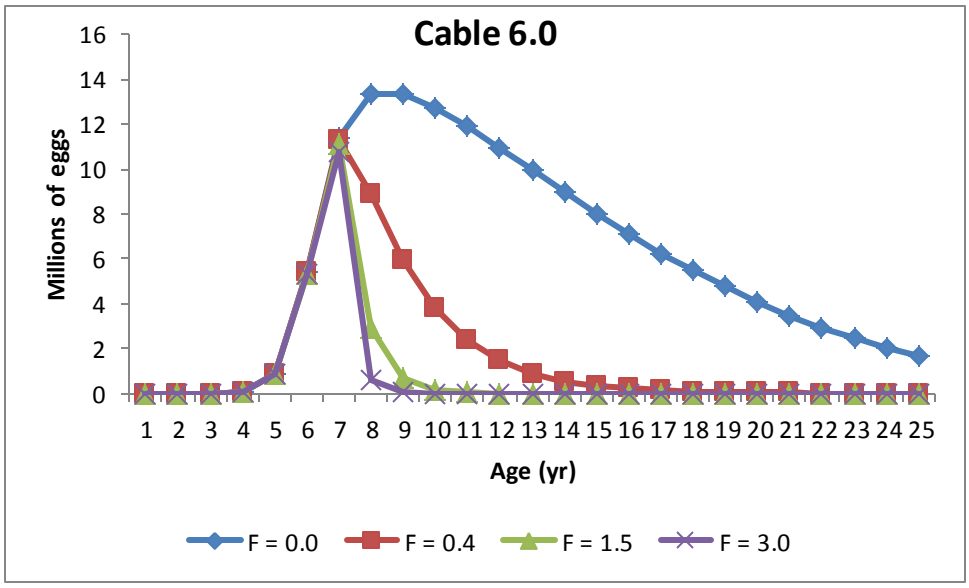
Appendix A: von Bertalanffy and Gaussian Growth Curve Comparison, and *Appendix B: Applying the Canadian Precautionary Approach to California Department of Fish and Wildlife Commercial Landings* contain additional analyses that were conducted by the review committee as part of their assessment in support of the recommendations contained within this report.

Appendix C: Scientific and Technical Review Process details the process Ocean Science Trust developed and implemented for this review.

APPENDIX A: VON BERTALANFFY AND GAUSSIAN GROWTH CURVE COMPARISON

We (the review committee) compared the von Bertalanffy and Gaussian growth models to determine which would be most appropriately applied in the SPR model. The first step was to examine the cumulative fecundities, in millions of eggs, over the projected 25-year lifetime. The age-specific fecundities from the Cable 6.0 model, which uses a von Bertalanffy growth curve, and those from the CDFW 1.0 model, that uses their new growth model, are shown in Figure 1 plotted at the same scale. The main difference is the levels of fecundity. In the Cable model, the cumulative fecundity at F = 0 is 147.2 million eggs while the fecundity at F = 0 in the CDFW model is 46.4 million. At high fishing mortality rates, the fecundities are similar (17.7 vs. 15.8 million eggs at F = 3.0) which means that the SPR ratio will be much higher in the CDFW model; the higher SPR is just the result of the much lower unfished cumulative fecundity (Figure 2).

A.



B.

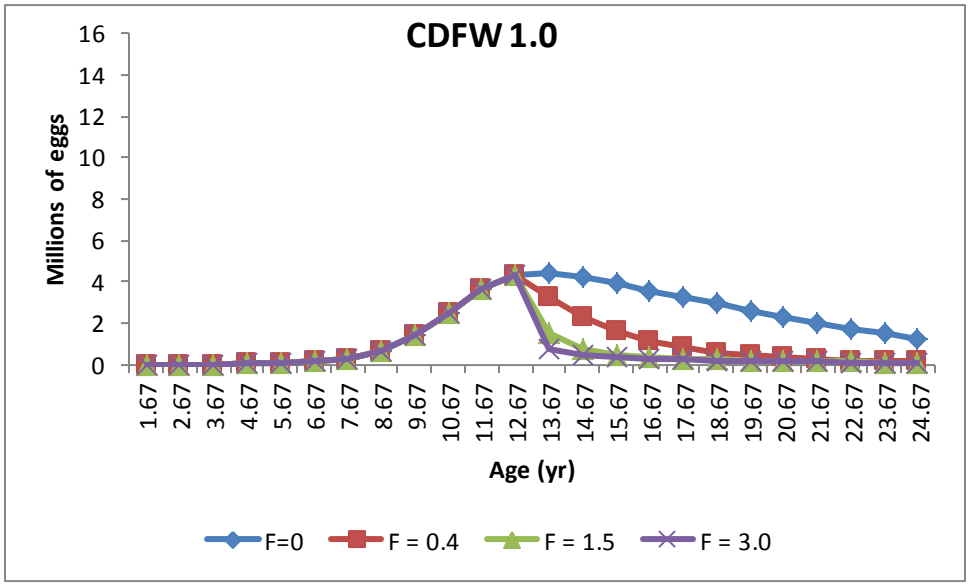


Figure 1. Fecundity by age for the two SPR models: a) the Cable 6.0 and b) CDFW 1.0 for a range of fishing mortality rates.

Even for a high fishing mortality rate of 3.0 per year, the CDFW model still has a SPR value of 34%. However, when we plotted the corresponding average lobster weight against fishing mortality (Figure 3), which is the basis of the control rule, we found that neither model would be a very sensitive way of determining fishing mortality and the corresponding fishing mortality rate that would be used to obtain the SPR value each year. Note that the axes in Fig. 3 are plotted to reflect that the average weight is what is measured so as to estimate the fishing mortality rate. With the current SPR model, fishing mortality would be undefined at average weights less than 1.40 lb. For comparison, the average weight at legal size (82.5 mm CL is 1.25 lb for males and 1.38 lb for females).

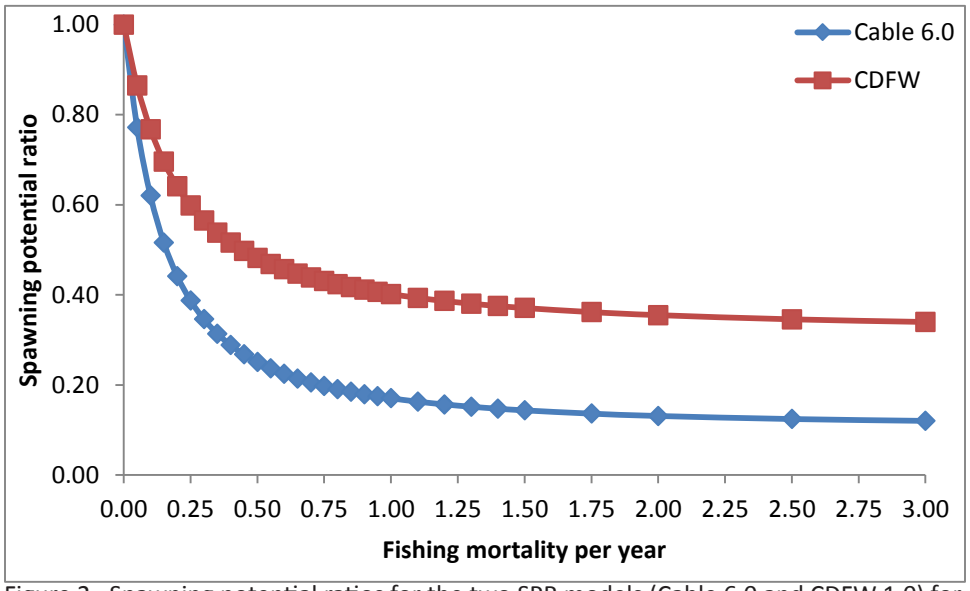


Figure 2. Spawning potential ratios for the two SPR models (Cable 6.0 and CDFW 1.0) for a range of fishing mortality rates.

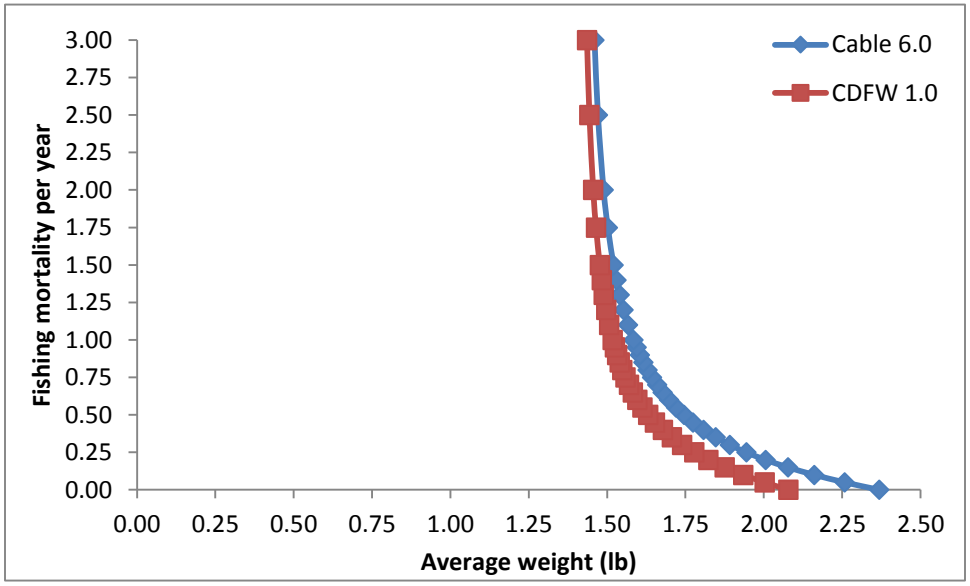


Figure 3. Average spiny lobster weights and the corresponding fishing mortality rates from the two SPR models (Cable 6.0 and CDFW 1.0).

APPENDIX B: APPLYING THE CANADIAN PRECAUTIONARY APPROACH TO CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMERCIAL LANDINGS

We compared the sensitivity of the Department's proposed catch-based threshold approach with another strategy in use for the American lobster in Canada. In 2014, Canada established a reference point for their southern Gulf of Saint Lawrence lobster fisheries using commercial catch based on the Precautionary Approach. Based on this approach, if landings are between an upper stock reference (USR) and the limit reference point (LRP, i.e., the caution zone) it automatically triggers management considerations. These harvest control rules are pre-set management actions aimed at exiting the caution zone and re-entering the healthy zone (i.e., above the upper stock reference point). Based on a 123-year data series for the southern Gulf of Saint Lawrence, management considerations would have been triggered for the American lobster 85 times, and 12 times in a recovery mode (i.e., drastic reduction of effort to a no fishing situation) (Figure 1). However, applying the California spiny lobster approach to the same American lobster data revealed that California's proposed 0.8 reference point would only be exceeded two times (Figure 2).

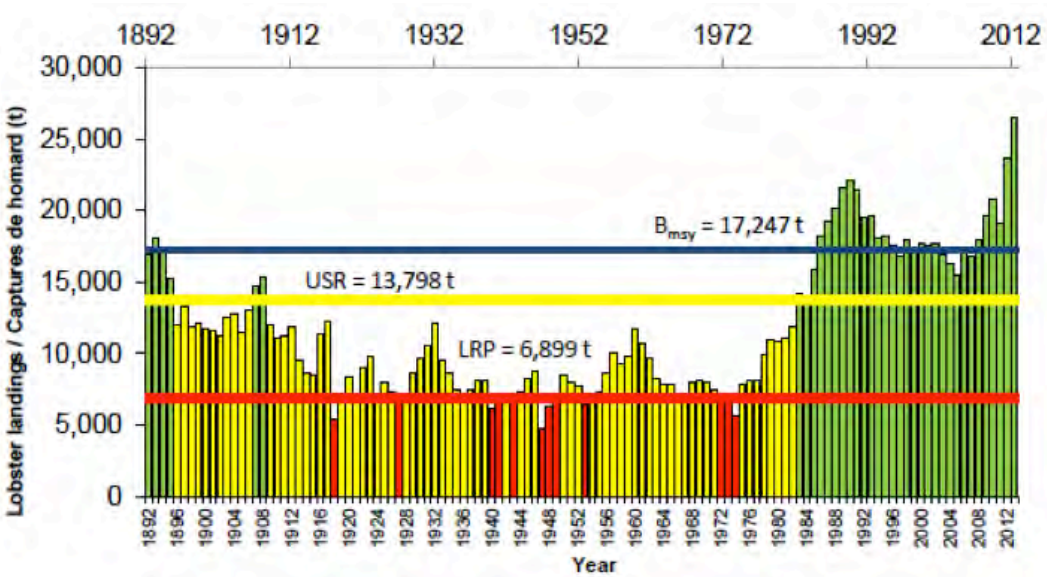


Figure 1. American lobster landings (1893-2013) in the southern Gulf of St. Lawrence; years in the healthy zone (i.e., above the upper stock reference [USR]) in green, caution zone (i.e., between the USR and the limit reference point [LRP]) in yellow, and below LRB in red. The biomass for the maximum sustainable yield (B_{msy}) is estimated at 17,247 t.

We then applied Canada's Precautionary Approach to the Department's California spiny lobster commercial landings data. To do this, we calculated a hypothetical biomass at maximum sustainable yield (B_{msy}) based on a time period from low landings followed by a "recovery" to higher and more sustained landings. Based on the information in the draft spiny lobster FMP, the lowest landings (with information available on effort) were observed in 1974 followed by increasing landings (with fluctuations) until 2013. Based on the trap pull haul (webinar presentation fig. 2.6), it seems that the effort level (traps hauled) increased 4 times: 200,000-400,000 between 1973-1979; 400,000-600,000 (with a drop in 1991-2) between 1980-94; ±800,000 between 1995-2011; and above 1 million in 2012-3. A reasonable assumption is that the stock could sustain the 800,000 trap haul level (16 years) since the landings did not drop during the time. Hence, the time period could be established between 1974 and 2011. However, please note that based on the CPUE reference values (see fig. 4.7 in FMP document), one could reasonably argue that the stock does not seem to react well to the level of effort in the last 7 years and that the time period should/could be 1974-2007. Nevertheless, using the 1974-2011 period

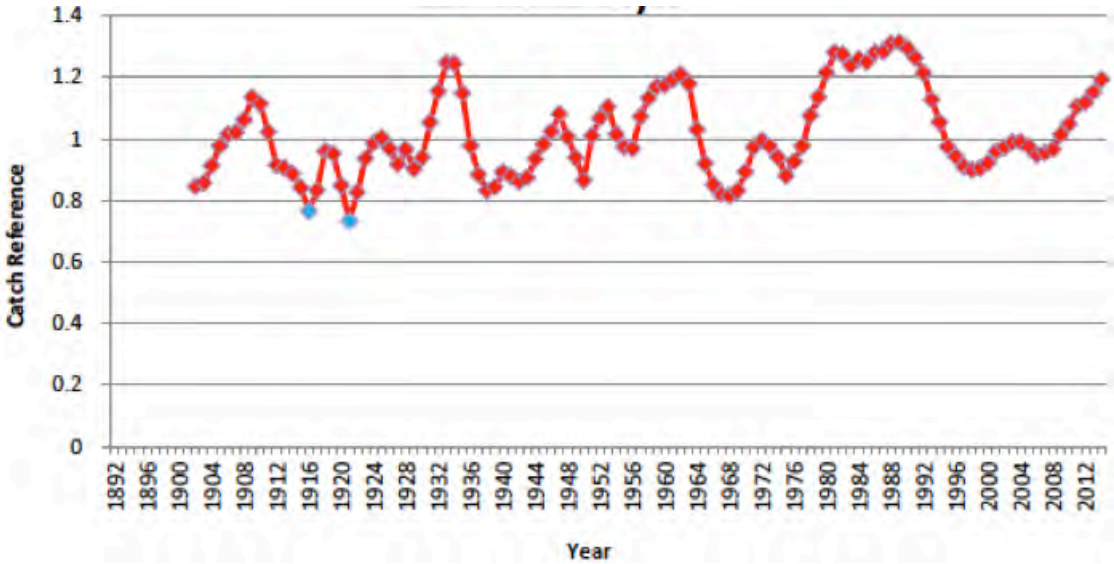


Figure 2. Catch reference for the American lobster landings (1892-2013) in the southern Gulf of St. Lawrence using the California spiny lobster catch-based threshold approach.

the B_{msy} is estimated at 587,409, given an upper stock reference (80% of B_{msy}; USR) of 469,927, and the limit reference point (40% of B_{msy}; LRP) of 234,963 (Figure 3). The draft FMP (Figure 4.6) indicates that between 1935 and 2013 management considerations would have been trigged 11 times, mostly between 1960-74. Based on the precautionary approach and using a 3-year running average for landings, the spiny lobster fishery was below LPR in 1975-6 (critical zone; normal because the time period stated at low values), which would trigger a recovery period (i.e., drastic reduction of effort to a no fishery situation). Since 1935, landings were between LRP and USR (caution zone) 31 times (latest 1977-87) that would have triggered immediate management actions from pre-established harvest control rules (mainly effort reductions) to, hopefully, exit the caution zone and re-enter the healthy zone. Landings between USR and Bmsy was observed 9 times (latest 1993-5) but does not trigger urgent management considerations, but could be used by managers to start a dialogue with the industry (e.g., to be cautious).

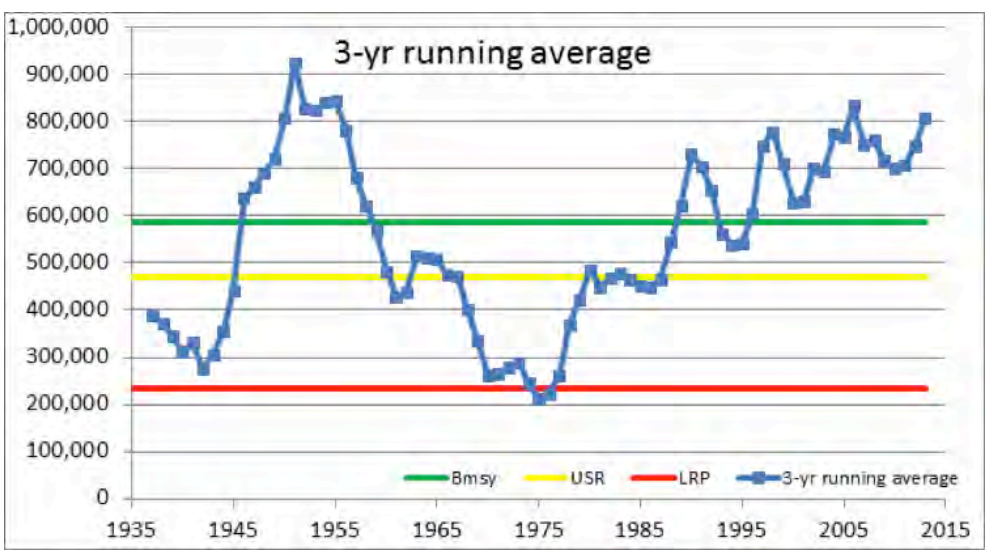


Figure 3. Application of Canada's Precautionary Approach to California spiny lobster commercial landings data; years in the healthy zone (i.e., above the upper stock reference [USR; yellow line]), caution zone (i.e., between the USR [yellow line] and the limit reference point [LRP; red line]), and below LRP. The biomass for the maximum sustainable yield (B_{msy}) is estimated at 587,409 lbs.

APPENDIX C: SCIENTIFIC AND TECHNICAL REVIEW PROCESS

The California Department of Fish and Wildlife (the Department) asked California Ocean Science Trust to coordinate an external scientific and technical review of the reference point thresholds prescribed in the California Spiny Lobster Fishery Management Plan (FMP) and supporting materials. Specifically, the Department sought an independent assessment of whether the technical components, spawning potential ratio model, and supporting documents that underpin the proposed reference point thresholds prescribed in the FMP are scientifically sound and reasonable given the Department's currently available data streams and analysis techniques. See the "Scope of Review" for details on the charge to reviewers.

Ocean Science Trust designed and implemented all aspects of the review process, including compiling appropriate background materials, drafting instructions to guide reviewers throughout the process, scheduling and hosting remote meetings as appropriate, and working with reviewers to produce a written final summary report, among other activities. Upon completion of the review, the final report was delivered to the Department and made publicly available on the Ocean Science Trust website. Throughout, Ocean Science Trust facilitated constructive interactions between the Department and reviewers as needed in order to ensure reviewers provide recommendations that are valuable and actionable, while maintaining the independence of the review process and outputs

Scientific Review Principles

In any review, it is our intent to provide an assessment of the work product that is balanced, fairly represents all reviewer evaluations, and provides feedback that is actionable. When building a scientific and technical review process, we seek to balance and adhere to six core review principles. These principles help guide the design and implementation of each review, and shape the final outputs:

- **Scientific rigor:** the process must yield an evaluation of whether scientific and technical components contained within products are valid, accurate and thorough.
- **Transparency:** given the context for the review, the process must include the appropriate level of information disclosure and openness in order to facilitate social recognition and accountability.
- **Legitimacy:** the process must yield an output that is viewed as authoritative in the eyes of scientific community, the requesting agency, and other constituents.
- **Credibility:** the process will seek to be unbiased and incorporate the best available science.
- **Salience:** the process will consider the most relevant scientific information while balancing management needs and timelines.
- **Efficiency:** the process will be as cost-effective as possible, and utilize time, resources, and effort in a proficient manner to create the most robust output possible.

Review Process

The review took place from October 2014 through May 2015. A timeline of each task is provided below.

	2014			2015				
Milestone	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**
Task 1 - Review Preparation								
Scope and process development; budget and administrative preparation; reviewer solicitation and selection process; collateral material development	X							
CDFW delivery of draft FMP to Ocean Science Trust		X						
Task 2 – Conduct Review								
Webinar 1: Initiation of Review (Attendees: CDFW, Review Committee, Ocean Science Trust)			X					
Webinars 2: FMP Assessment (Attendees: Review Committee, Ocean Science Trust)				X				
CDFW delivery of draft SPR model and report to Ocean Science Trust						X		
Webinar 3: SPR Model Assessment *(Attendees: CDFW, Review Committee, Ocean Science Trust)*						X		
Webinar 4: Cont. SPR Model Assessment, Develop Review Recommendations *(Attendees: Review Committee, Ocean Science Trust)*							X	
Task 3 – Finalize Summary Report								
Deliver final report to CDFW and make available online; publish membership of review committee; present findings to the Fish and Game Commission								X

Assembling the Review Committee

Ocean Science Trust implemented a reviewer selection process to assemble a review committee composed of four external scientific experts. Ocean Science Trust consulted with and accepted reviewer recommendations from the Ocean Protection Council Science Advisory Team (OPC-SAT), as well as Ocean Science Trust's own professional network among the academic and research community. Membership included experts from academia, research institutions, and government entities in order to deliver balanced feedback and multiple perspectives. Reviewers were considered based on three key criteria:

- **Expertise:** The reviewer should have demonstrated knowledge, experience, and skills in one or more of the following areas:
    - Fisheries biology, stock assessments and modeling, including spawning potential ratio analyses and application
    - Invertebrate ecology and/or population biology, with an understanding of California's coastal ecosystems, and how invertebrate stocks respond to fishing pressure, climate change and marine protected areas
- **Objectivity:** The reviewer should be independent from the generation of the product under review, free from institutional or ideological bias regarding the issues under review, and able to provide an objective, open minded, and thoughtful review in the best interest of the review outcome(s). In addition, the reviewer should be comfortable sharing his or her knowledge and perspectives and openly identifying his or her knowledge gaps.
- **Conflict of Interest:** Reviewers will be asked to disclose any potential conflicts of interest to determine if they stand to financially gain from the outcome of the process (i.e. employment and funding). Conflicts will be considered and may exclude a potential reviewer's participation.

Final selections for the review committee were made by the Ocean Protection Council Science Advisor (Ocean Science Trust Executive Director). Ocean Science Trust selected one member of the review committee to serve as chair to provide leadership among reviewers, help ensure that all members act in accordance with review principles and policies, and promote a set of review outputs that adequately fulfill the charge and accurately reflect the views of all members.

Series of Review Webinars

All meetings took place via a series of remote online meetings (webinars) and phone calls. At the outset of the review, Ocean Science Trust worked with the Department to develop detailed reviewer instructions that encouraged focused scientific feedback throughout the process. Instructions included directed evaluation questions and delegated tasks for reviewers based on their individual areas of expertise. The instructions were used to guide the development of meeting agendas, and track progress throughout the course of the review. For each meeting, advanced work was required of participants (e.g., conducting analyses, drafting responses to guiding questions, preparing presentations) in order for all parties to come prepared for meaningful discussions. Ocean Science Trust notified CDFW of additional requested materials and data prior to the first "Initiation of Review" webinar in mid-November.

- **Webinar 1: Initiation of Review (*December 2014*)**

Ocean Science Trust hosted an initial remote meeting (webinar) to provide the review committee and Department staff an overview of the scope and process, and clarify the roles and responsibilities of each participant. The Department provided a summary of the relevant management context to ensure reviewers understood the role of the review in the FMP development process, and how the outputs would be considered. The bulk of the webinar focused on a presentation by the Department of the scientific and technical components

of the draft FMP. The webinar was an opportunity to develop a shared understanding of the tasks and allow reviewers to ask the Department any clarifying questions about the review materials before they convened independently to conduct their technical assessment.

- **Webinars 2-4: Reviewers convened with Ocean Science Trust to conduct review (*January through April 2015*)**

Ocean Science Trust convened three remote one- to two-hour webinars with the review committee to conduct an in-depth evaluation of the components identified in the Scope of Review. In advance of each webinar, reviewers were asked to prepare responses to guiding evaluation criteria questions from the review instructions. During each webinar, reviewers discussed their findings and developed conclusions and recommendations. Outputs from each webinar, as well as reviewer responses to the questions, guided the development of the final report.

Final Summary Report

Ocean Science Trust worked with the review committee to synthesize reviewer assessments (responses to the review instructions and input during webinars) into a cohesive, concise final report. The final report was delivered to the Department in May 2015, and made publicly available on Ocean Science Trust's website along with the identities of the review committee members. Ocean Science Trust presented the review results on behalf of the review committee at the June 10, 2015 California Fish and Game Commission public meeting in Mammoth, California.

Contact Information

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California Department of Fish and Wildlife

CDFW Feedback on Implementation Details of the Lobster Advisory Committee Commercial Recommendations:

The California Department of Fish and Wildlife (CDFW) recently met with the Lobster Advisory Committee (LAC) Commercial Representatives to discuss details regarding implementation of the proposed regulatory changes to the commercial lobster fishery recommended by the LAC. Input from CDFW Marine Region and Law Enforcement Division (LED) is provided in Blue Font below. This information is being disseminated to refine the details prior to the formal regulatory process which takes place after the Fisheries Management Plan (FMP) has been adopted in 2015. The LAC recommendations will part of the Lobster FMP implementing regulations that will be formally introduced to the Fish and Game Commission in mid-2015. Any new regulations that are adopted would not be implemented until the 2016-2017 lobster season.

LAC Commercial Proposal

Table 1. COMMERCIAL TRAP LIMIT

CATEGORY	NUMBER OF TRAPS	PROVISIONS
"300" Transferable Permit (T) "300" Non-transferable permit (NT)	300	• May stack another permit for a maximum of 2 permits (2 x 300 traps = 600 trap maximum) • The second permit remains transferable • Death provision applies only to transferable permits (NT permits are not transferable – even due to death)
CDFW supports the proposed LAC trap limit of 300 traps with the ability to stack another permit for a maximum of 2 permits (2 permits X 300 traps = 600 trap maximum). The second permit remains transferable, and the death provision only applies to transferable permits.		
Phase-In Stacking Permit	300	• Available to either transferable or non-transferable permittees • Non-transferable permit • Only available for three years (must be renewed annually) • Permit funds would go for commercial lobster research & monitoring – ($5,000 - $10,000 annual permit fee) • Would become effective when trap limits go into effect
CDFW recognizes that a "Phase-In Stacking Permit" may no longer be necessary given the projected timeline for the proposed implementing regulations. New regulations would become effective for the 2016/2017 season.		

Table 2. GENERAL PROVISIONS
▪ Death provision applies only to transferable permits **CDFW Proposed Details:** ▪ non-transferable permits can never be transferred - even upon death ▪ All traps must be tagged (on trap or buoy or both)(must be purchased annually); details to be worked out with LED **CDFW Proposed Details:** ▪ Traps shall be tagged w/ Dept. issued trap tags ▪ 300 trap tags shall be issued once a year to each permittee before the start of the season ▪ Program costs to be incorporated into permit fees, and tags will not be purchased separately ▪ Catastrophic gear loss provision; details to be worked out with LED (application would include requirement to report details of loss)(Information could be shared with permitted recovery projects) **CDFW Proposed Details:** ▪ The Department is considering defining catastrophic loss as the loss of 75 or more tags per permit. Catastrophic loss claims will be formally submitted to the Department for approval. LED will determine whether to approve or deny catastrophic loss claims. Claim information must include a detailed description of the circumstance that caused the loss, date of loss, number of traps lost along with their tag numbers, and location of lost traps (Latitude and Longitude coordinates). ▪ Catastrophic loss tags would be uniquely identifiable. ▪ Allow scuba equipment on board commercial vessels to retrieve lost traps or remove line from prop (not allowed to "fish" when on scuba) **CDFW Proposed Details:** ▪ Scuba gear already allowed per T14 122. Cannot be used for "take" ▪ Provide clarification that no lobsters can be taken or possessed w/scuba gear, or any other underwater breathing apparatus (including hookah). However, this equipment can be used to locate and secure (retrieve) traps ▪ Provide clarification that lobsters contained in a trap that has been secured using scuba gear, or any other underwater breathing apparatus equipment (including hookah), can be possessed after the trap has been serviced aboard the vessel ▪ More than one permittee may operate from a single vessel; each permittee whose traps are being pulled must be aboard **CDFW Proposed Details:** ▪ Dual Permittee on board – both permittees will be responsible for any violation found on vessel ▪ 7 day soak time using "Federal Rules" regarding weather **CDFW Proposed Details:** ▪ Adopt similar language to CFR Title 50 §660.230(3) ▪ Traps must be attended at least once every 7 days. No specific weather exemption. If traps cannot be pulled due to weather, fishermen will be responsible for burden of proof (e.g. NOAA weather advisory, or other formal documentation from a government weather agency)

- Limit use of "note" to fish traps by other than permit holder. May open (and retain the lobsters within) or retrieve traps belonging to another lobster fisherman with a note and notification to DFW LED (details to be worked out with LED); may not bait or fish traps for another permittee

  CDFW Proposed Details:
- Formalize the "note" process by requiring permittees to submit a waiver request to the Department. Waiver should be similar to the Dungeness Crab Waiver to Pull Traps
- Specific protocol and procedures for the Lobster Waiver to be established by LED
- CDFW will determine each waiver request on individual case basis. The information submitted in the waiver request will be used to determine the conditions. Lobsters may not be retained unless specified by CDFW as a condition on the waiver
- Department to be notified in advance
- Responsibility for violations is transferred to the individual permittee that has permission to pull
- Traps need to be either removed from water or wired open as specified by CDFW as a condition on the waiver.
- Establish provision to allow other fishermen targeting other species to recover lost or derelict gear (if found more than 9 days after the close of lobster season). This would be modeled after the existing provision for the recovery of up to 6 Dungeness crab traps.

- Allow commercial fishermen to start hauling their traps to sea before the season starts on the Monday before opening week (9 days before the commercial opener) and allow traps with doors open to remain in the water not more than 9 days after the close of the season

  CDFW Proposed Details:
- Allow traps to be deployed (unbaited and doors wired open) 9 days before the commercial opener, and allow traps to remain in the water (unbaited and doors wired open) not more than 9 days after the close of the season. Traps must be out of the water no later than 9 day after the close of the season.
- "Bait day" remains the same

- Branding of floats allowed (details to be worked out with LED)

  CDFW Proposed Details:
- This is already allowed under current regulations and so a regulatory change is not necessary to implement it. Therefore, the following clarification is provided as guidance to encourage effective compliance. Each buoy identifying a lobster trap would display the commercial fishing license identification number of the lobster operator permit holder followed by the letter P. The commercial fishing license number and the letter P would be at least one (1) inch in height and at least one-eight (1/8) inch in width, and either branded on the buoy in a way that is clearly readable or painted in a color that contrasts with that of the buoy. All lobster permit holders would maintain lobster trap buoys in such a condition that buoy identifying numbers are clearly readable.

- **Additional Issue (Not addressed by the LAC):** Traps that are wired open and unbaited still need to be serviced every 96 hours per FG9004

  CDFW Proposed Details:
- Traps that are wired open and unbaited would be exempt from the trap service requirement for a period up to 14 days. Traps that have not been serviced after 14 days will be considered

abandoned.

CDFW Staff

Bob Puccinelli – Captain, Law Enforcements Division

Craig Shuman – Regional Manager

Tom Barnes – Manager of State Managed Species

Kai Lampson – Lobster FMP Coordinator

Representatives on the LAC

Rodger Healy – Commercial Fishing Representative

Shad Catarius – Commercial Fishing Representative

Jim Colomy – Commercial Fishing Representative

Josh Fisher – Alternate Commercial Fishing Representative

Spiny Lobster Fishery Management Plan
Lobster Advisory Committee
Recreational Lobster Fishery Management Recommendations

The California Department of Fish and Wildlife (CDFW) recently met with the Lobster Advisory Committee (LAC) Recreational Representatives to discuss details regarding implementation of the proposed regulatory changes to the recreation lobster fishery recommended by the LAC. Input from CDFW Marine Region and Law Enforcement Division (LED) is provided in Blue Font below. This information is being disseminated to refine the details prior to the formal regulatory process which takes place after the Fisheries Management Plan (FMP) has been adopted in 2015. The LAC recommendations will be part of the Lobster FMP implementing regulations that will be formally introduced to the Fish and Game Commission (Commission) in mid-2015. It is expected that any new regulations adopted by the Commission would be implemented at the start of 2016-2017 lobster season.

Please Note: Proposals to prohibit or "ban" the use of conical hoop nets or to establish a seasonal limit were not part of the LAC's consensus recommendations for the recreational fishery. CDFW will not be forwarding these proposals to the Commission as part of the LAC recommendations.

Full consensus was achieved by the Lobster Advisory Committee for the following:

Issue: Lobster caught by recreational fishermen is being illegally sold in the commercial market place. Requiring sport fishermen to clip or punch the center tail flap makes it possible for law enforcement to identify lobsters caught in a recreational fishery that end up in the market and take appropriate legal action. This proposal will give law enforcement a tool to address buyers and markets that purchase lobster from recreational fishermen.

Proposal: Recreationally caught lobsters are to be tail-clipped (removing the bottom half of the central tail flap) or tail-punched in the central tail flap (Australia requires a 10 mm minimum hole). Additional details will be worked out with LED (e.g. clipped when landed?).

LAC Action: The LAC achieved consensus on the tail-clipping proposal above.

CDFW Proposed Details:

- Allow both tail clipping and tail punching as an option: remove at least the bottom half of central tail fin or single hole punch the center tail fin with a hole no less than ¼ inch in diameter

- The tail must be clipped or punched at the same time the catch information is reported on the report card (T14 29.91(C): When the cardholder moves to another location code, or finishes fishing for the day, he or she must immediately record on the card the number of lobster kept from that location

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Issue: Use of mechanized pullers has made it easier to rob from commercial traps.

Proposal: Restrict the use of mechanized pullers only to persons in possession of proof of disability/medical (Disabled Mechanized Hoop Net Puller Permit). This restriction would only pertain to power driven mechanized pullers and not hand operated davits with single pulley systems.

> Clarification: This restriction only applies to individuals targeting or in possession of lobster, not persons solely targeting crab.
>
> Proposed CDFW Disabled Mechanized Hoop Net Puller Permit Form:
> The following conditions must be met to qualify for issuance of a Disabled Mechanized Hoop Net Puller Permit: "For the purposes of this permit a disability means a permanent loss, significant limitation, or diagnosed disease or disorder, which substantially impairs an individual's ability to physically pull by hand and retrieve a hoop net for the purpose of targeting lobster." A medical physician must sign the permit application form.

LAC Action: The LAC achieved consensus on the mechanical puller restriction proposal above.

Some members noted that the broad wording of the disability option could render the management measure ineffective and suggested that the LAC work with LED to ensure the new rule has "teeth" when it is applied.

CDFW Recommendation:

- Mechanized pullers should not be restricted beyond current legal use
- The potential for illegal use given the circumstance is not viewed as a reasonable justification for restriction
- Illegal use of mechanized pullers is not a commonly observed problem. LED reported one case over ten years ago, with four lobsters taken from a commercial trap using a mechanized puller
- The creation of disabled hoop net puller permit creates an unnecessary burden on disabled persons through the potential added expense and time to obtain the necessary note from a physician in order to obtain a permit

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Issue: The midnight opener creates a "rush" mentality that fuels conflicts between recreational users and poses a safety risk. The current lobster opener date and time can be difficult to understand (confusion regarding when the season actual "starts") and constituents are having trouble following the law. CDFW has been asked to consider an alternate start time.

Proposal: Make the lobster opener 6:00 a.m. on Saturday instead of 12:01 a.m. on Saturday.

Key discussion points:

- New time is workable for LED
- Proposal improves safety conditions
- Regulatory change has no impact on the resource
- Commercial season dates would not change

LAC Action: The LAC achieved consensus on the lobster opener proposal above. The group acknowledged concerns regarding the economic impact this proposal may have on some dive charters.
LAC recommendation is for a 6:00 a.m. Saturday start time (lobster opener)

CDFW Recommendation:

- Proposed 6:00 am Saturday start time is easier to facilitate enforcement patrols
- Promotes a safer environment for both boaters and divers on opening day
- Reduces the "rush" mentality which fuels negative diver/hoop netter interactions at harbors and jetties

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Issue: Marking hoop net floats will improve accountability and safety among recreational fishermen, and may help reduce illegal commercialization.

Proposal: Hoop net floats should be marked with unique ID (DL, Go ID, etc. — details to be worked out with LED).

LAC Action: The LAC achieved consensus on the marked hoop net proposal above.

CDFW Proposed Details:

- Buoy identification should be required with GO ID number. This number shall be legible, but there will be no size or color specification. Go ID number helps maintain fishermen's confidentiality, and minimizes the risk of identity theft
- LED can easily verify this number in the field as it can be cross referenced with the fishing license

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Issue: Spear fisherman have been harassed or cited for carrying a spear gun while in the pursuit of lobster. Constituents have asked for clarity on the definition of a "hooked" device.

Proposal: Keep change simple. Ensure regulatory language focuses on how lobster can be taken (i.e. "skin and scuba divers may take lobsters by hand only") and not how it cannot be taken; remove "hooked device" term from current regulations. The proposal allows for possession of a spear gun or pole spear underwater while hunting lobsters. Misuse of this equipment to take lobster (lobster can only be taken by hand) would remain illegal.

LAC Action: The LAC achieved consensus on the hooked device proposal above.

CDFW Recommendation:

- Remove "hooked device" for clarification

MEETING PARTICIPANTS

CDFW Staff

Bob Puccinelli – Captain, Law Enforcements Division

Craig Shuman – Regional Manager

Tom Barnes – Manager of State Managed Species

Kai Lampson – Lobster FMP Coordinator

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Jim Salazar – Recreational Fishing Representative

Michael Gould – Recreational Fishing Representative

Al Stasukevich – Recreational Fishing Representative

Paul Romanowski – Recreational Fishing Representative

State of California
Department of Fish and Wildlife

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COMMISSION

2015 MAY 29 PM 2:55

Memorandum

Date: May 22, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Briefing Binder Submission for the June 10-11 Fish and Game Commission Meeting Regarding the Spiny Lobster Fishery Management Plan**

Background

An extensive public scoping process was used by the Department of Fish and Wildlife (Department) to develop implementing regulations for a Spiny Lobster Fishery Management Plan (FMP). The Department established the Lobster Advisory Committee (LAC) as a formal stakeholder group who met over a period of two years to make management recommendations, including regulation changes. The LAC consisted of seated representatives from a broad spectrum of constituencies. Through consensus, the LAC approved a management framework that established proposed mechanisms to promote an orderly fishery while assuring sustainability and also taking into account the economic implications of that same framework. The Department supports the efforts of the LAC, and has made every effort to recommend FMP regulations that are consistent with the LAC consensus-based proposals. The Department and LAC regulatory recommendations were transmitted to the Commission for consideration at its April 8th, 2015 meeting.

The Department is requesting direction from the Commission on options to include in a regulatory package that is associated with the FMP. The enclosed table summarizes the LAC and Department commercial and recreation spiny lobster regulatory recommendations. This table provides a summary of the recommendations transmitted to the Commission at its April 8th, 2015 meeting. The Department will also be requesting direction from the Commission on four additional Department recommendations for the commercial spiny lobster fishery that are included in the table.

The additional recommendations include:

1. Require each lobster operator permit holder to report the number and location of traps lost at the end of each season. This will allow the Department to estimate gear loss for the fishery and help facilitate recovery efforts.

2. Extend the lobster operator permit death provision transfer period from one to two years. This is recommended by the Department's License and Revenue Branch (LRB) to provide families or estates an extra year to transfer a permit.
3. Add a prohibition on the transfer of lobster operator permits to include pending violation(s). Current regulations allow permits to be transferred when a permit holder has pending violations. This recommendation was added at the request of LRB and Law Enforcement Division to prevent transfers from occurring before results of the pending violation(s) are known.
4. Require a Department application for the transfer of lobster operator permits.

If you have any questions or need additional information, please contact Dr. Craig Shuman, Regional Manager of the Marine Region, by telephone at (805) 568-0216 or by email at craig.shuman@wildlife.ca.gov.

Attachment

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Summary Table of the Lobster Advisory Committee and Department of Fish and Wildlife spiny lobster regulatory recommendations

Background: The Department of Fish and Wildlife (Department) is requesting direction from the Fish and Game Commission (Commission) on options to include in the regulatory package that is associated with the Spiny Lobster Fishery Management Plan. This table provides a summary of the Lobster Advisory Committee (LAC) and Department commercial and recreation spiny lobster regulatory recommendations transmitted to the Commission at its April 8th, 2015 meeting. The table also includes additional Department recommendations not addressed by the LAC.

	LAC Consensus and Department Recommended Lobster Regulatory Changes	
1	Regulations to implement the lobster Fishery Management Plan (FMP).	Identifies the purpose and scope, harvest control rules, management responses, and lists definitions specific to the FMP.
	Recreational Recommendations	
	Change Summary	**Purpose**
2	Require the hole-punching or fin-clipping of all retained lobsters.	To reduce illegal commercialization of sport caught lobsters.
3	Change recreational season opener from 12:01 am to 6 a.m. on Saturday.	To increase safety during the season opener.
4	Require hoop net operators to mark hoop net floats with GO-ID numbers.	Allows Enforcement to easily identify the owner of a hoop net.
5	Clarify methods of take for crustaceans.	Clarifies that spear gear can be possessed by divers while targeting or in possession of lobsters so long as the gear is not used in the taking of lobster.
	Commercial Recommendations	
	Change Summary	**Purpose**
6	Trap limit of 300 traps per permit with the ability to purchase a second permit for a maximum 600 traps.	To improve the commercial fishery and create a more orderly fishery.
7	Add fees and forms associated with trap tag program.	Required to add new fees and other administrative requirements for the trap tag program.
8	Catastrophic trap tag loss provision. Catastrophic loss defined as the loss of 75 or more tags per permit.	To allow for the replacement of tags lost over a season.
9	Clarify use and possession of SCUBA equipment from commercial lobster vessels.	Amended for clarification purposes.
10	More than one permittee may operate from single vessel.	Added for clarification purposes. Each permittee whose traps are being pulled must be aboard and both permittees will be responsible for any violation found on vessel.
11	Require traps to be serviced at least every 7 days (currently 4 days).	Proposed as part of the trap limit proposal.
12	Waiver requirement for allowing lobster operator permit holders to service another fishermen's traps.	To formalize the process to meet enforcement and fishermen's needs.
13	Add a provision to allow fishermen to recover up to 6 lost traps.	To allow for the retrieval of lost gear.
14	Extend the period (from 6 to 9 days) for deploying and retrieving traps before and after the season.	Proposed as part of the trap limit proposal.
15	Allow branding of trap buoys.	**No regulatory change needed**: Already covered by existing regulations and will be clarified.

Summary Table of the Lobster Advisory Committee and Department of Fish and Wildlife spiny lobster regulatory recommendations

Additional Department Recommendations Not Addressed by the LAC		
	Change Summary	**Purpose**
16	Define abandoned traps. Traps considered abandoned if not retrieved 14 days after the season ends.	To define when a trap is considered abandoned.
17	Improving fishery dependent data collection.	Department recommends modifying lobster logbooks and landing receipts to gather essential fishery information to better manage the fisheries.
18	Prohibit the transfer of a lobster operator permit when there are pending violation(s).	Added as an enforcement need.
19	Extend the lobster operator permit death provision transfer period from 1 to 2 years.	Added at the request of the Departments Licenses and Revenue Branch to allow more time to transfer a permit.
20	Require an application for the transfer of lobster operator permits.	Require an application to transfer a permit. Add appeal requirements when a transfer is denied. Add criteria for transfer of permit under a tag system.
21	Reporting of commercial trap loss.	At the end of each season, require commercial fishermen to report the number and location of traps lost over the season.
LAC Consensus Recommendations Not Supported by the Department		
	Change Summary	**Rationale for not Supporting**
22	Restrict the recreational use of mechanized pullers to only disabled fishermen.	Proposed by the LAC due to concerns of the illegal use of mechanized pullers to poach commercial traps. Law Enforcement Division indicates that illegal use of mechanized pullers is not a commonly observed problem. Proposed regulation would penalize the lawful anglers using mechanical pullers due to the very few anglers that may abuse the use of mechanized pullers.
23	Three-year phase-in trap limit approach.	The Department does not support this recommendation as the projected timeline for the proposed implementing regulations is later than anticipated by the LAC. This gives industry more time to prepare for the proposed new trap limit. In addition, it will be difficult for the Department to implement and administer the program as proposed by the LAC.

From: Puccinelli, Robert@Wildlife
Sent: Thursday, April 02, 2015 8:41 AM
To: Brittain, Mary@FGC
Cc: Farrell, Bob@Wildlife; Shuman, Craig@Wildlife; Barnes, Tom@Wildlife; Mason, Tom@Wildlife
Subject: RE: April Agenda

Thanks Mary. I know that it is getting late in the game, but I received the attached lobster letter that was sent to the Director a year ago. I responded to the letter writer and told the subject that I would forward his letter to the FGC when the lobster issue was to be brought up to the FGC. Almost forgot about it until now.

Thanks,
Bob

Puccinelli, Robert@Wildlife

From: Brown, Leslie@Wildlife
Sent: Monday, March 24, 2014 8:49 AM
To: Farrell, Bob@Wildlife; Puccinelli, Robert@Wildlife
Subject: FW: Mechanized lobster hoop puller ban

Follow Up Flag: Follow up
Flag Status: Flagged

Bob or Bob-

If this should go to someone else please let me know. Thanks!

--Leslie

From: Wildlife DIRECTOR
Sent: Friday, March 21, 2014 3:59 PM
To: Brown, Leslie@Wildlife
Subject: FW: Mechanized lobster hoop puller ban

Hi, Leslie -

Please have the appropriate staff member respond to Vartan Chorbajian's allegation. Please instruct staff to 'cc' **Director@wildlife.ca.gov** while replying.

If you have received this message in error, please let me know, so it can be forwarded promptly to the correct individual.

Thank you -

Sandi K.
For: ***Director@wildlife.ca.gov***

From: Ace Line Hauler [mailto:info@acelinehauler.com]
Sent: Friday, March 21, 2014 12:31 PM
To: Wildlife DIRECTOR
Cc: jim@sabaslayer.com
Subject: Mechanized lobster hoop puller ban

To whom it may concern:
It has come to our attention that the California Department of Fish and Wildlife is under pressure to ban the use of electrical hoop pullers.
Our company Ace Line Hauler has been manufacturing these devices for the last fourteen years and it is our belief that our devices only enhance the lives of our customers.
No matter where you live; California, Washington or British Columbia we see the same type of resistance from commercial fishermen. They view the entire resource as theirs and do not want to see any sport fisherman using a product that will make them more efficient. What our product does is very simple. Electric pot or hoop pullers allow sports fishermen who are older or handicapped in any way to be able to go out and enjoy fishing. We hear from

customers all the time who were not able to go out for Lobster, crab or Shrimp anymore because of shoulder injuries, arthritis and a variety of other issues before they purchased a puller. We are not suggesting that all of our customers are disabled; many of them are able but looking for an easier way to pull their traps and there is nothing wrong with this. One thing that nobody can dispute is that a lobster caught by a sports fisherman brings much more into the local economy than a commercially caught lobster so if a fisherman wants to use a device that makes life easier that should be his decision.

Ace Line Hauler buys products for the manufacture of our puller from the United States. We then assemble in Canada and then resell to the United States. This provides jobs for not only our Canadian employees but also Americans in the manufacturing and retail sectors.

One of the main arguments against people possessing a mechanized puller is that they will use it to rob from Commercial traps. The cost for our puller is roughly 600 dollars. Many other mechanized pullers are upwards of 1300 dollars. Many of the people who purchase pullers have boats that are 100,000 dollars. People spending this type of money have worked hard their entire lives; they have fishing permits and are law abiding citizens. Speaking with Jim Salazar who is on the Lobster Advisory Committee he says that there has never been a citation or conviction to back up this claim. The claim that they would risk breaking the law is ridiculous.

Obviously for us we have an interest in seeing mechanized pullers being made available to all sports fishermen as this is our primary business..... but there is a larger issue at play here. The larger issue is that commercial fishermen will always be looking for more of the resource. They will always be working at limiting sports fishing opportunities and it seems that in southern California they have the DFG on their side. The DFG is supposed to be managing the resource for everyone. How sad that future generations may not have the sports fishing opportunities we did.

Sincerely

Vartan Chorbajian
Ace Line Hauler
690C Comox Road
Nanaimo, BC V9R 3J3
250.753.7179 office
250.753.7178 fax
Toll free 1.866.753.7179
www.acelinehauler.com
info@acelinehauler.com

Do you really need to print this email?

ACE LINE HAULER
FISHING PRODUCTS

Josh Fisher
[redacted]

RECEIVED
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COMMISSION
2015 MAY 18 PM 3:57
MLS

April 29, 2015

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Commissioner,

As a commercial fisherman and alternate member of the Lobster Advisory Committee, I urge you to reject the Spiny Lobster LAC proposal in its current form.

The Lobster FMP and proposed regulations would negatively impact the commercial fishery of spiny lobster and the availability of sustainability caught lobster. The often referenced commercial fishery survey used to suggest that the industry supports low trap limits was not completed by a large number of fisherman and is not by any stretch of the imagination a scientifically valid survey. I do not support the proposed trap limitations.

The issue that is frequently mentioned by Department staff as a rational for dramatic trap limits is decreasing CPUE and the danger of allowing the current level of traps fished by the commercial industry.

However, according to the CDFG California Spiny Lobster Stock Assessment - Executive Summary,

"The number of traps deployed is expected to continue to decline, and the number of permit transfers in any given year (who may fish at higher effort levels) is not expected to be significant. Measured CPUE, while currently lower than two or three decades ago,is still within a standard deviation of the average CPUE over the last decade."

"Catchability, the percent of the total catch caught with each trap pull and estimated using depletion models, has been consistent since 1998, the earliest year considered. This consistency is seen despite fluctuations in the ultimate size of the catch each season."

The real threat to the sustainability of California spiny lobster is the vastly under-regulated recreational fishery. No biological imperative exists to necessitate the need for any immediate resource collection restriction measures on the commercial industry. The Departments' own studies have shown that the current fishery regulations are working as intended to preserve the fishery stock and the fishery is sustainable.

Recreational lobster fishing is growing substantially and currently represents nearly 30% of the overall (commercial + recreational) catch. Regulations limiting the use of conical hoop nets should be implemented to limit the potential long-term negative effects on the lobster stock sustainability.

Sincerely,

Josh Fisher

Josh Fisher

Fish Market Restaurant
Suzanne C. Fish, General Manager
750 N. Harbor Dr.
San Diego, CA 92101

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Commissioner,

I wish to express my opposition to the current LAC proposal before the Commission regarding the commercial spiny lobster fishery. I urge you to reject the proposal in its current form and to modify the plan to mitigate the negative impacts on long-term commercial fishermen who would be unfairly and unjustifiably impacted.

The LAC was predetermined to implement significant trap limitations without a scientific reason. The number of sublegal-size lobsters caught by commercial fisherman has increased in recent years, which suggests that the current size limit is effective, and that a sizable number of sublegal-size lobsters are present in the wild and contributing to reproduction (Neilson, 2011).

According to the CDFG California Spiny Lobster Stock Assessment - Executive Summary,

"The number of traps deployed is expected to continue to decline, and the number of permit transfers in any given year (who may fish at higher effort levels) is not expected to be significant.

Measured CPUE, while currently lower than two or three decades ago,is still within a standard deviation of the average CPUE over the last decade.

"Catchability, the percent of the total catch caught with each trap pull and estimated using depletion models, has been consistent since 1998, the earliest year considered. This consistency is seen despite fluctuations in the ultimate size of the catch each season."

The proposed 300 trap limit is unjustified and no scientific rational was utilized in developing this trap limit.

I ask that a compromise be crafted that protects the economic viability of existing businesses that have historically fished a larger number of traps and yet still meets everyone's long-term goal of protecting the fishery.

Sincerely,

Suzanne C. Fish - General Manager
Fish Market Restaurants
750 N. Harbor Drive
San Diego, CA. 92083
sfish@thefishmarket.com

Bruce Campbell
[redacted]

April 28, 2015

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Commissioner,

As a commercial fisherman, I wish to express my opposition to the current Fishery Management Plan and regulatory proposal sent to the Commission by the Spiny Lobster Advisory Committee and the Marine Resource Committee. I urge you to reject the proposal in its current form and to modify the plan to protect long-term commercial fishermen who would be unfairly and unjustifiably impacted.

The LAC was predetermined early on to implement significant trap limitations without a scientific reason.

According to the CDFG California Spiny Lobster Stock Assessment - Executive Summary,

"The number of traps deployed is expected to continue to decline, and the number of permit transfers in any given year (who may fish at higher effort levels) is not expected to be significant.

Measured CPUE, while currently lower than two or three decades ago,is still within a standard deviation of the average CPUE over the last decade."

No biological imperative exists to necessitate the need for any immediate resource collection restriction measures. The Departments own stock assessment studies have shown that the current fishery regulations are working as intended to preserve the fishery stock and the fishery is sustainable.

The proposed 300 trap limit is unjustified and no scientific rational was utilized in developing this trap limit.

I ask that a compromise be crafted that protects the economic viability of existing businesses that have historically fished a larger number of traps and yet still meets everyone's long-term goal of protecting the fishery.

Sincerely,

Bruce Campbell

California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Commissioner,

I wish to express my opposition to the current LAC proposal before the Commission regarding the commercial spiny lobster fishery. I urge you to reject the proposal in its current form and to modify the plan to mitigate the negative impacts on long-term commercial fishermen who would be unfairly and unjustifiably impacted.

The LAC was predetermined to implement significant trap limitations without a scientific reason. The number of sublegal-size lobsters caught by commercial fisherman has increased in recent years, which suggests that the current size limit is effective, and that a sizable number of sublegal-size lobsters are present in the wild and contributing to reproduction (Neilson, 2011).

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The proposed 300 trap limit is unjustified and no scientific rational was utilized in developing this trap limit.

I ask that a compromise be crafted that protects the economic viability of existing businesses that have historically fished a larger number of traps and yet still meets everyone's long-term goal of protecting the fishery.

Sincerely, Bruce Kirkbride Bruce A. Thielen

[redacted]

653-02_Lease_Renewal 053006.doc

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Many changes

Number M-653-02

RENEWAL OF LEASE

Made this 3rd day of November, 2005 at Santa Barbara, California by and between the State of California, acting by and through its Department of Fish and Game, hereinafter referred to as "Lessor" and Santa Barbara Mariculture Company, hereinafter referred to as "Lessee."

WITNESSETH:

WHEREAS, Lessee failed to exercise an option to extend a prior lease agreement (also M-653-02) and said lease terminated on October 31, 1999, and

WHEREAS, Lessee did on January 1, 2001 enter into Lease M-653-02, for the purpose of cultivating rock scallops, and

WHEREAS, Lessee requested that title to Lease Agreement (No. M-653-02) be transferred to Santa Barbara Mariculture Company, and the Fish and Game Commission at its meeting on November 3, 2005, authorized the transfer of title of State Water Bottoms Lease M-653-02, from Pacific Seafood Industries, and

WHEREAS, Lessee indicated an interest in renewing a prior lease agreement and exercised that option by requesting Fish and Game Commission consideration of the request in correspondence dated March 29, 2005, and

WHEREAS, Lessee is presently a registered aquaculturist authorized to grow marine life for profit in the waters of the State of California as provided in Section 15101 of the Fish and Game Code, and

WHEREAS, Lessee expressed support for the Lessor's recommended approval of the requested lease renewal for the stipulated 5-year period at a lease rate of five ($5.00) dollars per acre, and.

WHEREAS, the Fish and Game Commission determined that a lease renewal was in the best interest of the State of California at the November 3, 2005, meeting in Santa Barbara, California and approved the renewal based on the renegotiated lease terms recommended by the Department of Fish and Game.

NOW, THEREFORE, THIS INDENTURE WITNESSETH:

That, in consideration of payment of the monies hereinafter stated in accordance with the renegotiated terms recommended by the Lessor and accepted at a duly called and noticed hearing of the Fish and Game Commission of the State of California, pursuant to law and in consideration of the covenants contained herein on the part of the Lessee, Lessor does hereby grant to Lessee the exclusive privilege to cultivate

approved shellfish hereon and in those certain waters of the State of California described as follows, to wit:

> All that area lying within the Santa Barbara Channel, Santa Barbara County, State of California, starting from the Santa Barbara light located at 34°23'08" North, 119°43'03" West on the Santa Barbara quadrangle, California, Santa Barbara County, 7.5 minute series, topographic, U.S. Department of the Interior, Geological Survey; southwesterly on a bearing of 256° true, 9,000 feet to the point of beginning located at coordinates 34°23'20" North, 119°45'01" West on the Goleta quadrangle, California, Santa Barbara County 7.5 minute series, topographic, U.S. Department of the Interior, Geological Survey then east 1,250 feet; then south 1,250 feet; west 2,500 feet; then north 1,250 feet; then 1,250 feet to the point of beginning.

The area described hereinbefore, containing an area of 71.74 acres more or less, comprises Aquaculture Lease M-653-02 (Appendix 1).

This lease, in accordance with provisions of Section 15400 of the Fish and Game Code, as may from time to time be amended or changed by the State Legislature, is for the sole purpose of cultivating rock scallops (*Crassadoma gigantea*, formerly *Hinnites multirugosus*), speckled scallop (*Argopectin aequisulcatus*), Japanese bay scallop (*Patinopectin yessoensis*), Pacific oyster (*Crassostrea gigas*), Kumamoto oyster (*Crassostrea sikamea*), Manila clam (*Venerupis philippinarum*), and Mediterranean mussel (*Mytilus galloprovincialis*) in the previously designated area.

The cultivation of additional species of aquatic plants and animals requires the approval of the Fish and Game Commission. Seed stock, other than those obtained from State waters, must be inspected and certified before planting in compliance with Section 15201 of the Fish and Game Code, and must be planted by Lessee in a manner and at a size approved by the Lessor. A request for certification of seed stock will be submitted by Lessee to the Lessor at least ten (10) days prior to the proposed date of inspection.

All scallops, oysters, clams, and mussels shall be cultured on buoyed submerged longlines, anchored to the bottom within the lease area. No other mode of operation or culture method is authorized unless Lessee shall first obtain approval thereof from the Fish and Game Commission. Only the designated species planted in the specified lease area may be taken.

The notice of intent to plant scallops, oysters, clams or mussels on the lease area shall be given to the Department of Fish and Game's, Marine Region aquaculture coordinator, P.O. Box 1560, Bodega Bay, California, 94923, telephone (707) 875-4261, or at such other place as Lessor may from time to time designate. In addition to the required ten (10) day notice, at least a 24-hour notice shall be given to the aquaculture coordinator or their designee, giving the details on where an observer can meet the

Lessee prior to planting.

This lease renewal is authorized for a term of five (5) years commencing on the 3rd day of November, 2005, and ending on the 2nd day of November, 2010, for the total rental of three hundred and fifty dollars and seventy cents ($358.70) per year, and a privilege tax on all products harvested as provided by Fish and Game Code Sections 8051, 18406.5, and 15406.7. Beginning January 1, 2006, said annual rental fee will be payable to Lessor on a calendar year basis, January 1 – December 31. If said annual rental fee is not paid within sixty (60) days after the close of the month in which it is due, an additional 10 percent penalty shall be paid. Lessor, at its option, may declare the lease abandoned for failure to pay such rental fees within 90 days from the beginning of the rental period; although such abandonment shall not relieve Lessee of its obligation to pay such rental and penalty which are due and owing. Lessee agrees to pay Lessor reasonable attorney fees and costs incurred in collecting any amounts and/or penalties due and owing from Lessee under the provisions of this lease. Lessee agrees to pay said fee(s) to Lessor at its office in the City of Sacramento, State of California, or at such other place as Lessor may, from time to time, designate.

Lessee expressly recognizes and acknowledges that any payments by Lessee as provided for herein are subject to the provisions of Section 15410 which states "All leases shall be subject to the power of the Legislature to increase or decrease the rents, fees, taxes, and other charges relating to the lease, but no increase in rent shall be applicable to an existing lease until it is renewed."

In accordance with actions taken by the Fish and Game Commission of the State of California, pursuant to Fish and Game Code Section 15400, Lessor does hereby renew said lease for such consideration, specific purposes and subject to covenants, terms, conditions, reservation, restrictions and limitation as are set forth herein.

This lease is made upon the following additional terms, conditions, and covenants, to wit:

A. This lease may, at the option of Lessee, be renewed for additional periods not to exceed 25 years each. If the Lessee desires to enter into a new lease for a period commencing after expiration of the initial 5-year term, Lessee shall give notice to Lessor one (1) year prior to termination of the lease. The lease may be renewed if, during the notification period, terms for a new lease are agreed upon by Lessee and the Commission. Lessor retains the right to renegotiate terms of the lease, including annual rental rates, subject to adjustment considering changes in the Consumer Price Index and current lease rates, at the Fish and Game Commission's discretion, no more often than every five (5) years during the current renewal period.

B. Lessee shall keep records as required in accordance with Fish and Game Code Section15414 on forms to be supplied by Lessor, and shall maintain adequate

accounting records sufficient to determine monies due to Lessor by the 10th day of each month for all shellfish harvested during the preceding calendar month. Lessor reserves the right to inspect Lessee's premises, equipment and all books at any time, and Lessee's records pertaining to its cultivation on the leased premises and all shellfish taken from the leased premises.

C. The lease shall be improved at no less than the minimum rate established by Commission regulations (Section 237(i)(A) - (C), Title 14, CCR). A minimum rate of planting for shellfish other than oysters shall be negotiated for option periods. A record of seed catching activity for rock scallops and mussels will be reported in the annual proof of use statement required by Section J. Planting credit will be given for catching naturally produced seed on the lease. Off-bottom improvement rate for single seed oysters is 5,000 single seed per acre per year over the allotted acreage. The annual harvest rate for oysters shall be an average of 2,000 oysters (over one year of age) over the allotted acreage effective three years after effective date of lease. Lessor may declare this lease terminated if Lessee fails to meet these specified requirements, and if Lessee at any time, is proven to be failing in good faith, to pursue the purpose of this lease.

D. The lease shall be clearly marked at all times. Minimum marking of the lease shall include: One (1) buoy anchored on each corner of the four corners of the lease, and one (1) buoy possessing radar-reflecting capability, anchored in the center of the lease. All buoys used to define the boundaries of the lease shall be marked in conformance with the International Association of Lighthouse Authorities Maritime Buoyage System Regulations (33 CFR Section 62.33 and 66.01-10). All buoys shall bear the aquaculture lease number M-653-02. Buoys marking the boundaries of the lease shall be maintained at all times. If buoys are lost, displaced, or are otherwise removed from the lease, they must be replaced within a two-week period, weather conditions permitting, or the lease may be subject to termination.

E. If, at any time subsequent to the beginning date of this lease the use of long lines authorized herein shall fall into a state of disrepair or otherwise become an environmental or aesthetic degradation, as determined by Lessor, then upon written notice by Lessor, Lessee shall have sixty (60) days to repair and correct conditions cited by Lessor. Failure to comply with the written notice shall be grounds for termination of this lease and Lessee shall, at the option of Lessor, remove all improvements located on lands covered by this lease.

As a financial guarantee of growing structure removal and/or clean-up expense in the event the lease is abandoned or otherwise terminated, Lessee shall place on deposit, pursuant to the "Escrow Agreement for Clean-up of Aquaculture Lease M-653-02, Santa Barbara Channel, California", the sum of one thousand ($1,000) dollars. Such money shall be deposited over a two-year-period, payable one-half upon entering upon the lease, and one-half upon the first anniversary of such

inception date. The escrow account shall be increased if the Fish and Game Commission determines that, if abandoned, the culture operation is likely to be more expensive to remove. The escrow account may be reduced by the Commission upon demonstration that the probable cost of removal of all improvements would be less than the deposit previously required. In its annual Proof-of Use Report, the Lessor shall advise the Commission of its best estimate of the probable cost of removal the lease operation. The escrow agreement, escrow holder, and escrow depository shall be agreed upon by the Executive Director of the Fish and Game Commission and the Lessor.

If Lessee abandons this lease without removing growing structures therefrom, the escrow deposit shall be expended to remove growing structures or otherwise clean up the lease.

In order to assure compliance with the escrow provisions of this lease, Lessee shall dedicate to the agreed upon escrow account specified in the "Escrow Agreement for Clean-up of Aquaculture Lease M-653-02, Santa Barbara Channel, California (Addendum 2)", hereby attached to and made part of this agreement, a total of five hundred dollars ($500). This amount equals one-half of the total amount, one thousand dollars ($1,000), to be deposited in the "Lease M-653-02, Santa Barbara Channel, California Escrow Account".

F. Lessee shall observe and comply with all rules and regulations now or hereinafter promulgated by any governmental agency having authority by law, including but not limited to State Water Resources Control Board, State Coastal Commission, State Lands Commission, and U.S. Army Corps of Engineers. Any other permits or licenses required by such agencies will be obtained by Lessee at his own sole cost and expense.

G. Lessee recognizes and understands in accepting this lease that his interest therein may be subject to a possible possessory interest tax that the county may impose on such interest, and that such tax payment shall not reduce any rent or royalty due the Lessor hereunder and any such tax shall be the liability of and be paid by Lessee.

H. Any modification of natural or existing features of the real property described in this lease, which are not consistent with the authorized uses under this lease are expressly prohibited without prior written consent of the Lessor.

I. As evidence of progress in aquaculture, Lessee shall submit each year to the State at the Marine Region office, P.O. Box 1560, Bodega Bay, California 94923, a written declaration under penalty of perjury, showing the date and amount of each type of aquaculture development and date and amount of designated species comprising each planting, including a diagram (map) showing area, amounts, and dates planted. Such annual proof-of-use shall be submitted on or

before February 1 of each year for the previous year, January 1 -- December 31, inclusive.

J. This lease shall be canceled at any time Lessee fails to possess a valid aquaculture registration issued pursuant to Section 15101 of the Fish and Game Code. Lessee agrees not to commit, suffer, or permit any waste on said premises or any act to be done thereon in violation of any laws or ordinances. This lease shall be subject to termination by Lessee at any time during the term hereof, by giving Lessor notice in writing at least ninety (90) days prior to the date when such termination shall become effective. In the event of such termination by Lessee, any unearned rental shall be forfeited to the Lessor.

K. This lease of State water bottoms only grants Lessee the exclusive right to cultivate marine life as described in the lease. The lease does not imply that any guarantee is given that shellfish may be grown or harvested for human consumption. The Lessor only has the statutory authority to enter into aquaculture leases (Fish and Game Code Section 15400 et. seq.). The California Department of Heath Services has the authority (Health and Safety Code Section 109875 et. seq. and 112150 et. seq.) to certify and regulate sanitary procedures followed in the harvesting, handling, processing, storage, and distribution of bivalve mollusk shellfish intended for human consumption.

Lessee must recognize that compliance by certified shellfish harvesters with the conditions and procedures set forth in the Department of Health Service's current "Management Plan for Santa Barbara Lease M-653-02, Santa Barbara Channel, California" and in the current "Contingency Plan for Marine Biotoxins in California Shellfish" is mandatory. These conditions and procedures establish classifications for certification to harvest shellfish (oysters, mussels and clams) and establish rainfall closures which may delay or prevent harvesting of cultured organisms from this lease and are a condition of the Shellfish Growing Area Certificate.

L. In addition to the conditions and restrictions herein provided for in this lease, and any right or privilege granted, conveyed or leased hereunder, shall be subject to, and Lessee agrees to comply with all applicable provisions of the California Fish and Game Code, and regulation of the Fish and Game Commission, in particular Sections 15400 - 15415, inclusive, of the Fish and Game Code, and expressly recognizes the right of the Legislature and the Fish and Game Commission to enact new laws and regulations. In the event of any conflict between the provisions of this lease and any law or regulation, the latter will control. This lease shall be deemed amended automatically upon the effective date of such conflicting law or regulation.

M. This lease is personal to the Lessee and shall not be transferred, assigned,

hypothecated or subleased, either voluntarily or by operation of law, without prior approval of the Fish and Game Commission.

N. The waiver by the Lessor of any default or breach of any term, covenant or condition shall not constitute a waiver of any other default or breach, whether of the same or any other term, covenant or condition, regardless of the Lessor's knowledge of such other defaults or breaches. The subsequent acceptance of monies hereunder by the Lessor shall not constitute a waiver of any preceding default or breach of any term, covenant or condition, other than the failure of the Lessee to pay the particular monies so accepted, regardless of the Lessor's knowledge of such preceding default or breach at the time of acceptance of such monies, nor shall acceptance of monies after termination constitute a reinstatement, extension or renewal of the agreement or revocation of any notice or other act by the Lessor. In the event of any breach by Lessee of any of the provisions hereof, other than the payment of any sum due from Lessee to Lessor hereunder, which breach is not remedied, abated and cured by Lessee within sixty (60) days after notice in writing, shall cause this lease to thereupon cease and terminate.

O. Lessee shall not assign or transfer this agreement without prior written approval. Such written approval of the assignment or transfer of lease shall be subject to any and all conditions required by the Fish and Game Commission including, without limitation by reason of the specifications herein, the altering, changing or amending of this agreement as deemed by the Commission to be in the best interest of the State.

P. All notices herein provided to be given or which may be given by either party to the other, shall be deemed to have been fully given when made in writing and deposited in the United States Mail, certified and postage prepaid and addressed as follows:

To the Lessor	DEPARTMENT OF FISH AND GAME 1416 Ninth Street Sacramento, CA 95814
To the Lessee	MR. BERNARD FRIEDMAN SANTA BARBARA MARICULTURE COMPANY 210 Wilson Street Santa Barbara, CA 93101

Nothing herein contained shall preclude the giving of any such written notice by personal service. The address to which notices shall be mailed as aforesaid to either party may be changed by written notice given by such party to the other, as hereinbefore provided.

Q. Lessee hereby indemnifies and holds harmless the Lessor, its officers, agents and employees against any and all claims and demands of every kind and nature whatsoever arising out of or in any way connected with the use by the Lessee of said lease or the exercise of the privilege granted herein.

Q. The terms, provisions, and conditions hereof shall be binding upon and inure to the benefit of the parties and the successors, and assigns of the parties hereto.

R. The attached Nondiscrimination Clause (OCP-1) Is hereby made a part of this agreement.

Except as herein amended, all other terms of said lease agreement shall remain unchanged and in full force and effect.

IN WITNESS THEREOF, the parties hereto have caused this lease to be duly executed as of the day and year first above written.

APPROVED:

FISH AND GAME COMMISSION

By: _____

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

By: _____
Lessor

BERNARD FRIEDMAN
SANTA BARBARA MARICULTURE COMPANY

By: _____
Lessee

Fish and Game Commission Lease History and Timeline for State Water Bottom Lease M-653-02

Lease No: M-653-02
Company: **Santa Barbara Mariculture**
Owner: Bernard Friedman
Address: [redacted]
Lease Location: Open Ocean off Santa Barbara

Action	Action Start	Action Expiration	Notes
Original Lease granted to Jeff Young (under Pacific Seafood Industries)	2/15/1984	2/14/1989	
Lease transferred to SB Mariculture	11/3/2005	11/2/2010	Fish and Game Commission at its meeting on 11/3/2005 authorized the transfer of the title of Lease from Pacific Seafood Industries to Santa Barbara Mariculture Company.
Commission approved 90-day extension at its 10/21/10 meeting	11/2/2010	2/1/2011	
Commission approved 180-day extension at its 12/16/10 meeting	2/1/2011	7/31/2011	
Commission approved 180-day extension at its 6/30/11 meeting	7/31/2011	1/27/2012	
Commission approved one year extension at its 8/03/11 meeting	1/27/2012	1/27/2013	
Commission approved one year extension at its 8/08/12 meeting	1/27/2013	1/27/2014	
Commission approved one year extension at its 6/27/13 meeting	1/27/2014	1/27/2015	
Commission approved one year extension at its 12/3/14 meeting	1/27/2015	1/27/2016	Fish and Game Commission at its meeting on 12/3/2014 approved a lease amendment to modify boundary descriptions in lease to reflect actual location of operation.

SANTA BARBARA MARICULTURE CO.
BERNARD L. FRIEDMAN
(805) 886-1283
4365 CUNA DRIVE
SANTA BARBARA, CA 93101

2043
90-3478/1222
193

4/15/15
DATE

PAY TO THE ORDER OF Department of Fish and Wildlife $ 500.00

five hundred + 00/100 DOLLARS

Security Features Details on Back.

Montecito Bank & Trust
5658 CALLE REAL
GOLETA, CALIFORNIA 93117

MAY 05 2015 001744

FOR Lease application

MP

CASUAL

FORM A

State Of California Department Of Fish And Game Application For Lease Of State Water Bottoms For Aquaculture

Applicant Name: Santa Barbara Mariculture Co. Phone No. (805) 886-1283

Address: 4365 Cuna Dr., Santa Barbara, CA 93110

Aquaculture Registration No 0969 Expiration Date 12/31/15

Species of plant or animals to be cultured:

Mytilus galloprovincialis

Crassostrea gigas

Crassadoma gigantean

Application is hereby made to the Fish and Game Commission of the State of California for a lease of State water bottoms in the area described in the attached exhibit entitled "Exhibit A-Legal Description", and as shown on the map attached hereto marked "Exhibit B". Each exhibit bears the name of this applicant. Such lease will be for the purpose of aquaculture involving the species designated above. In support of this application, the applicant hereby submits the following explanation of the type of operation and cultural practices to be employed:

A. Purpose of operation - research and development or production

B. Plan of development and proposed production schedule – 5 year plan

C. Type of cultural method(s) to be employed: bottom, long line, buoyed habitats, etc.

D. Department of Health Services growing water classification: approved, conditionally approved, prohibited, restricted or unclassified

(Attach additional sheets for detailed explanation)

Date: 4/15/15 Signed: [signature]

Print Name: Bernard Friedman

President

Santa Barbara Mariculture Company

(See instructions on the back)

500.00

MAY 05 2015 001744

Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110
805 886-1283
bernard@sbmariculture.com

April 15, 2015

Fish and Game Commission
1416 Ninth St.
Sacramento, CA 95814

Dear Fish and Game Commission:

I would like to thank you for approving a one year extension of my existing Santa Barbara Mariculture Company aquaculture lease M-653-02 at the December 3, 2014 Commission meeting in Van Nuys. I would like to complete the lease approval process for this lease, and enter into a longer term lease contract with the Commission.

I would like to amend the shape of the original lease as proposed in exhibit A1. In addition, I would like to request a new lease. Exhibit A2 which will consist of 26 acres and be adjacent to lease no. 1.

The description of both lease no. 1 and lease no. 2 are attached. See exhibit A1, A2, and B.

I would like both of these leases to reflect my current aquaculture registration (number 0969) in allowing me to grow *Mytilus galloprovincialis* (Mediterranean mussel), *Crassostrea gigas* (Pacific oyster), and *Crassadoma gigantean* (Rock scallop).

Santa Barbara Mariculture Company is the leading offshore shellfish production company on the West Coast both in the number of years practicing offshore shellfish culture and quantities of shellfish produced. Both these leases will be used for research, development, and production of shellfish. The existing and proposed operation will use submerged longlines as the structure from which shellfish will be grown. The existing lease already has a conditionally approved classification from the California Department of Public Health.

Santa Barbara Mariculture Company has worked with the Department of Fish and Wildlife and the California Fish and Game Commission to further the research and development of offshore shellfish culture and wishes to continue a productive relationship with the State of California.

Sincerely,

Bernard Friedman

President of Santa Barbara Mariculture Co.

EXHIBIT A1

A portion of submerged lands within the Santa Barbara Channel, lying southerly of the Santa Barbara coast, in the County of Santa Barbara, in the State of California, described as follows.

LEASE SITE No.1

Commencing at the lighthouse near the bluff along the Pacific Ocean, at an approximate position of N 34° 23' 46.8", W 119° 43' 21.5";

thence westerly, approximately 9112 feet to a point having California State Plane Zone 5 (SPC5) grid coordinates of 1970460.00 feet North, 6032940.00 feet East, and having a geodetic position of N 34° 23' 39.231", W 119° 45' 09.832", the northeasterly corner and Point of Beginning of LEASE SITE No.1;

thence North 68°34'30" West, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971373.16 feet North, 6030612.88 feet East, and having a geodetic position of N 34° 23' 47.860", W 119° 45' 37.789";

thence South 21°25'30" West, 801.46 feet grid (801.50 feet at mean sea level), to a point having SPC5 grid coordinates of 1970627.09 feet North, 6030320.12 feet East, and having a geodetic position of N 34° 23' 40.430", W 119° 45' 41.126";

thence South 68°34'30" East, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1969713.923 feet North, 6032647.24 feet East, and having a geodetic position of N 34° 23' 31.801", W 119° 45' 13.170";

thence North 21°25'30" East, 801.46 feet grid (801.50 feet at mean sea level), to the Point of Beginning.

The above geodetic SPC5 and geodetic positions are based on the NAD83 datum. The above described **LEASE SITE No. 1** contains 46.00 acres and is as shown on Exhibit B, attached hereto and made a part hereof for informational purposes.

This description has been prepared by me in accordance with provisions of the Professional Land Surveyors Act.

Robert J. Reese 03.20.2015

Robert J. Reese, LS 6208

LICENSED LAND SURVEYOR
ROBERT J. REESE
Exp 03/2016
LS6208
STATE OF CALIFORNIA

EXHIBIT A2

A portion of submerged lands within the Santa Barbara Channel, lying southerly of the Santa Barbara coast, in the County of Santa Barbara, in the State of California, described as follows.

LEASE SITE No.2

Commencing at the lighthouse near the bluff along the Pacific Ocean, at an approximate position of N 34° 23' 46.8", W 119° 43' 21.5";

thence westerly, approximately 9112 feet to a point having California State Plane Zone 5 (SPC5) grid coordinates of 1970460.00 feet North, 6032940.00 feet East, and having a geodetic position of N 34° 23' 39.231", W 119° 45' 09.832";

thence North 68°34'30" West, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971373.16 feet North, 6030612.88 feet East, and having a geodetic position of N 34° 23' 47.860", W 119° 45' 37.789", the northeasterly corner and Point of Beginning of LEASE SITE No.2;

thence North 68°34'30" West, 1412.93 feet grid (1413.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971889.28 feet North, 6029297.60 feet East, and having a geodetic position of N 34° 23' 52.737", W 119° 45' 53.591";

thence South 21°25'30" West, 801.46 feet grid (801.50 feet at mean sea level), to a point having SPC5 grid coordinates of 1971143.20 feet North, 6029004.84 feet East, and having a geodetic position of N 34° 23' 45.307", W 119° 45' 56.928";

thence South 68°34'30" East, 1412.93 feet grid (1413.00 feet at mean sea level), to a point having SPC5 grid coordinates of 197062709 feet North, 6030320.12 feet East, and having a geodetic position of N 34° 23' 40.430", W 119° 45' 41.126";

thence North 21°25'30" East, 801.46 feet grid (801.50 feet at mean sea level), to the Point of Beginning.

The above geodetic SPC5 and geodetic positions are based on the NAD83 datum. The above described **LEASE SITE No. 2** contains 26.00 acres and is as shown on Exhibit B, attached hereto and made a part hereof for informational purposes.

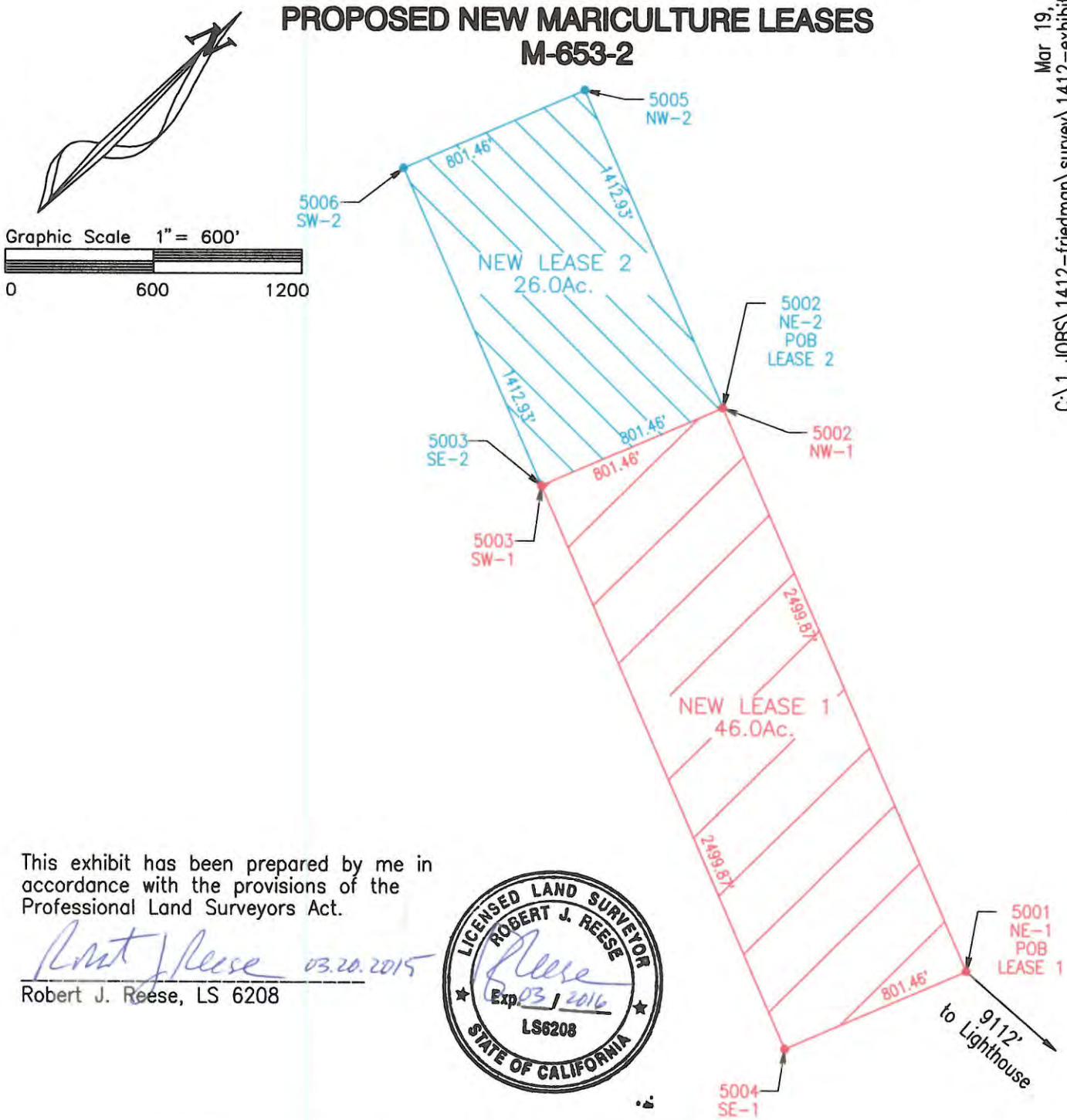
This description has been prepared by me in accordance with provisions of the Professional Land Surveyors Act.

Robert J Reese 03.20.2015

Robert J. Reese, LS 6208

LICENSED LAND SURVEYOR
ROBERT J. REESE
Exp. 03/2016
LS6208
STATE OF CALIFORNIA

EXHIBIT B
PROPOSED NEW MARICULTURE LEASES
M-653-2



Mar 19, 2015
C:\1 JOBS\1412-friedman\survey\1412-exhibitB.pro

This exhibit has been prepared by me in accordance with the provisions of the Professional Land Surveyors Act.

Robert J. Reese 03.20.2015

Robert J. Reese, LS 6208

LICENSED LAND SURVEYOR
ROBERT J. REESE
Exp. 03/2016
LS6208
STATE OF CALIFORNIA

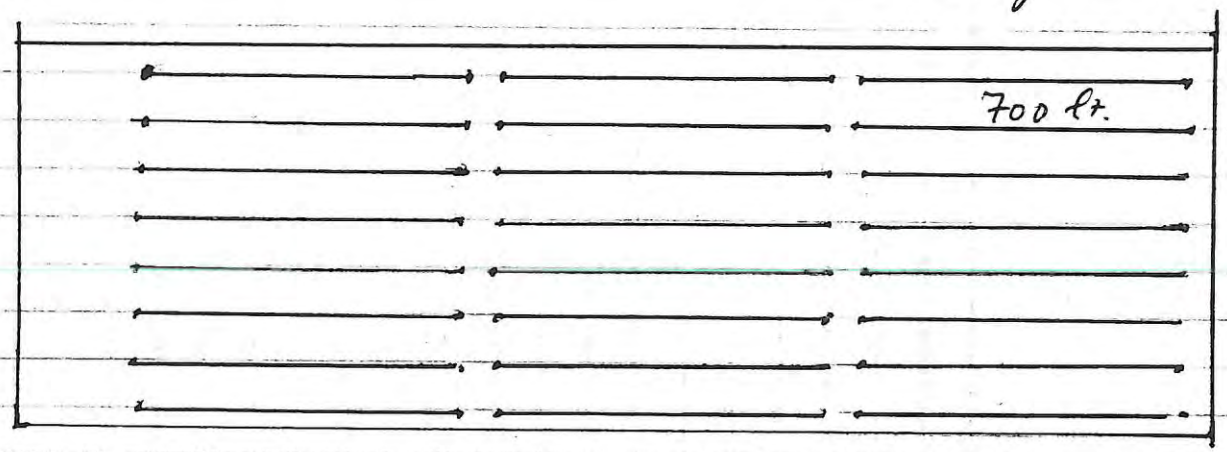
COORDINATE DATA: PROPOSED LEASE CORNERS

Pt.	Descr.	North(Y)	East(X)	N.Lat	W.Long
5001	NE-1	1970460.00	6032940.00	34°23'39.231"	119°45'09.832"
5002	NW-1	1971373.16	6030612.88	34°23'47.860"	119°45'37.789"
5003	SW-1	1970627.09	6030320.12	34°23'40.430"	119°45'41.126"
5004	SE-1	1969713.93	6032647.24	34°23'31.801"	119°45'13.170"
5005	NW-2	1971889.28	6029297.60	34°23'52.737"	119°45'53.591"
5006	SW-2	1971143.20	6029004.84	34°23'45.307"	119°45'56.928"

Santa Barbara Mariculture

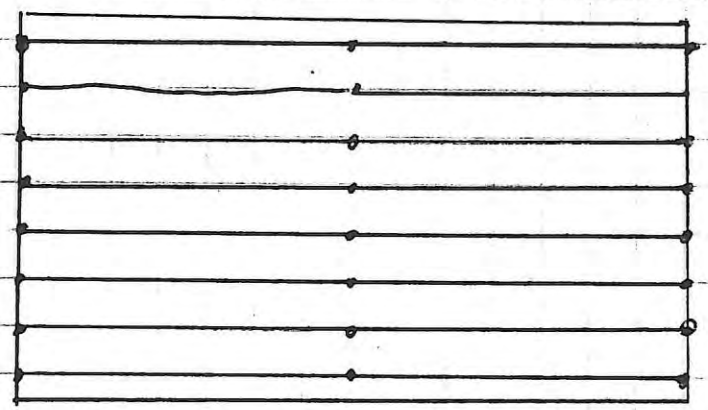
each longline = 700 ft.

Lease 1
46 acres
800 x 2500 ft



8 x 3 = 24 longlines

Lease 2
26 acres
800 x 1412 ft.



□ = 100 ft

2 x 8 = 16 longlines

Bernard Friedman
Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110

April 7, 2015

Five Year Work Plan

Currently there are 12 longlines on two-thirds of the Eastern portion of lease 1. Each longline grows 10,000 lbs. of Mediterranean mussels per year. Together, the 12 longlines produce 120,000 lbs. annually.

At the end of year five, lease 1 will hold 24 longlines which are 700 feet long from anchor to anchor. They will be installed in 3 rows of 8 parallel to the shore. The lines will be spaced 100 feet apart and each grow 10,000 lbs. of mussels per year. The projected harvest from lease 1 will be 240,000 lbs. per year.

Also at the end of year five, lease 2 will hold 16 longlines which are 700 feet long anchor to anchor. They will be installed in 2 rows of 8 parallel to shore. The lines will be spaced 100 feet apart and each grow 10,000 lbs. per year for an annual yield of 160,000 lbs..

The combined annual yield for both leases is projected to be 400,000 lbs. at the end of year 5.

During the development of the leases, in year 1, 16 longlines in lease 2 will be established as well as 8 longlines in the Western half of lease 1. The installation of these 24 longlines will take less than a week to install and consist of putting 32 screw anchors in the seafloor and joining them with 1 ¼ inch tensioned rope. The harvest from the current 12 longlines will continue at 120,000 lbs. in year 1.

Year 2 will see an increase in yield with 8 more longlines incorporated into production with an increased yield of 200,000 lbs..

Year 3 will see an increase of 12 more longlines put into production while the original 12 longlines in the Easter half will be removed and replaced with new rope and screw anchors. Yield is expected to stay the same at 200,000 lbs. Construction of a second boat and equipment is expected to begin and be completed by the beginning of year 4.

Year 4 will see an increase in production as the new boat comes on line with a total of 30 longlines used for production of 300,000 lbs. of mussels.

Year 5 will be in full production of all 40 longlines with two boats working the farm. Yields for each longline will also steadily increase with each longline steadily increasing to an annual yield of 20,000 lbs.

Production by year 10 could be upward of 800,000 lbs. of mussels with steady and managed growth.

If there is a production failure in any given year, the Pacific oyster will be cultivated to offset losses and create income until mussel production comes back on line.

Similarly, SBMC would like to diversify with the Purple hinged rock scallop and is looking for opportunities to develop commercial production of this species.

SBMC will be investigating production techniques of other species as the opportunities become available. Integrated multi-trophic mariculture systems may be the future for California, and SBMC will alter its work plan accordingly to create a sustainable future for the long term.

State of California—Health and Human Services Agency
California Department of Public Health

MICHAEL WILKENING
Acting Director

EDMUND G. BROWN JR.
Governor

February 15, 2015

Mr. Bernard Friedman
Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110

Dear Mr. Friedman:

SHELLFISH GROWING AREA CERTIFICATE

Your application for a Shellfish Growing Area Certificate to harvest shellfish from aquaculture Lease M-653-02 in the Santa Barbara Channel has been reviewed and approved. The following Shellfish Growing Area Certificate Number has been assigned to the Santa Barbara Mariculture Company: SGA15-614 (Lease M-653-02).

This growing area is classified as ***Conditionally Approved***. Based on our review, your shellfishing operation at this growing area is currently in compliance with the requirements of Title 17, California Code of Regulations, Sections 7706 to 7733, and Section 112150 et seq. of the California Health and Safety Code, pertaining to the culture and harvesting of shellfish for human consumption.

The enclosed Shellfish Growing Area Certificate contains the terms and conditions for maintaining compliance with regulatory requirements for your shellfish operation at this lease and certification of this growing area. If you have any questions, please call me at (510) 412-4635.

Sincerely,

Gregg W. Langlois, Chief
Preharvest Shellfish Unit
Environmental Management Branch

Enclosure

SANTA BARBARA MARICULTURE CO.
BERNARD L. FRIEDMAN
[redacted]

2043
90-3478/1222
193

4/15/15
DATE

PAY TO THE ORDER OF Department of Fish and Wildlife $ 500.00

five hundred + 00/100 DOLLARS

Security Features Details on Back.

Montecito Bank & Trust
5658 CALLE REAL
GOLETA, CALIFORNIA 93117

MAY 05 2015 001744

FOR Lease application

MP

CASUAL

FORM A

State Of California Department Of Fish And Game Application For Lease Of State Water Bottoms For Aquaculture

Applicant Name: Santa Barbara Mariculture Co. Phone No. (805) 886-1283

Address: 4365 Cuna Dr., Santa Barbara, CA 93110

Aquaculture Registration No 0969 Expiration Date 12/31/15

Species of plant or animals to be cultured:

Mytilus galloprovincialis

Crassostrea gigas

Crassadoma gigantean

Application is hereby made to the Fish and Game Commission of the State of California for a lease of State water bottoms in the area described in the attached exhibit entitled "Exhibit A-Legal Description", and as shown on the map attached hereto marked "Exhibit B". Each exhibit bears the name of this applicant. Such lease will be for the purpose of aquaculture involving the species designated above. In support of this application, the applicant hereby submits the following explanation of the type of operation and cultural practices to be employed:

A. Purpose of operation - research and development or production

B. Plan of development and proposed production schedule – 5 year plan

C. Type of cultural method(s) to be employed: bottom, long line, buoyed habitats, etc.

D. Department of Health Services growing water classification: approved, conditionally approved, prohibited, restricted or unclassified

(Attach additional sheets for detailed explanation)

Date: 4/15/15 Signed: [signature]

Print Name: Bernard Friedman

President

Santa Barbara Mariculture Company

(See instructions on the back)

500.00

MAY 05 2015 001744

Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110
805 886-1283
bernard@sbmariculture.com

April 15, 2015

Fish and Game Commission
1416 Ninth St.
Sacramento, CA 95814

Dear Fish and Game Commission:

I would like to thank you for approving a one year extension of my existing Santa Barbara Mariculture Company aquaculture lease M-653-02 at the December 3, 2014 Commission meeting in Van Nuys. I would like to complete the lease approval process for this lease, and enter into a longer term lease contract with the Commission.

I would like to amend the shape of the original lease as proposed in exhibit A1. In addition, I would like to request a new lease. Exhibit A2 which will consist of 26 acres and be adjacent to lease no. 1.

The description of both lease no. 1 and lease no. 2 are attached. See exhibit A1, A2, and B.

I would like both of these leases to reflect my current aquaculture registration (number 0969) in allowing me to grow *Mytilus galloprovincialis* (Mediterranean mussel), *Crassostrea gigas* (Pacific oyster), and *Crassadoma gigantean* (Rock scallop).

Santa Barbara Mariculture Company is the leading offshore shellfish production company on the West Coast both in the number of years practicing offshore shellfish culture and quantities of shellfish produced. Both these leases will be used for research, development, and production of shellfish. The existing and proposed operation will use submerged longlines as the structure from which shellfish will be grown. The existing lease already has a conditionally approved classification from the California Department of Public Health.

Santa Barbara Mariculture Company has worked with the Department of Fish and Wildlife and the California Fish and Game Commission to further the research and development of offshore shellfish culture and wishes to continue a productive relationship with the State of California.

Sincerely,

Bernard Friedman

President of Santa Barbara Mariculture Co.

EXHIBIT A1

A portion of submerged lands within the Santa Barbara Channel, lying southerly of the Santa Barbara coast, in the County of Santa Barbara, in the State of California, described as follows.

LEASE SITE No.1

Commencing at the lighthouse near the bluff along the Pacific Ocean, at an approximate position of N 34° 23' 46.8", W 119° 43' 21.5";

thence westerly, approximately 9112 feet to a point having California State Plane Zone 5 (SPC5) grid coordinates of 1970460.00 feet North, 6032940.00 feet East, and having a geodetic position of N 34° 23' 39.231", W 119° 45' 09.832", the northeasterly corner and Point of Beginning of LEASE SITE No.1;

thence North 68°34'30" West, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971373.16 feet North, 6030612.88 feet East, and having a geodetic position of N 34° 23' 47.860", W 119° 45' 37.789";

thence South 21°25'30" West, 801.46 feet grid (801.50 feet at mean sea level), to a point having SPC5 grid coordinates of 1970627.09 feet North, 6030320.12 feet East, and having a geodetic position of N 34° 23' 40.430", W 119° 45' 41.126";

thence South 68°34'30" East, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1969713.923 feet North, 6032647.24 feet East, and having a geodetic position of N 34° 23' 31.801", W 119° 45' 13.170";

thence North 21°25'30" East, 801.46 feet grid (801.50 feet at mean sea level), to the Point of Beginning.

The above geodetic SPC5 and geodetic positions are based on the NAD83 datum. The above described **LEASE SITE No. 1** contains 46.00 acres and is as shown on Exhibit B, attached hereto and made a part hereof for informational purposes.

This description has been prepared by me in accordance with provisions of the Professional Land Surveyors Act.

Robert J. Reese 03.20.2015

Robert J. Reese, LS 6208

LICENSED LAND SURVEYOR
ROBERT J. REESE
Exp 03/2016
LS6208
STATE OF CALIFORNIA

EXHIBIT A2

A portion of submerged lands within the Santa Barbara Channel, lying southerly of the Santa Barbara coast, in the County of Santa Barbara, in the State of California, described as follows.

LEASE SITE No.2

Commencing at the lighthouse near the bluff along the Pacific Ocean, at an approximate position of N 34° 23' 46.8", W 119° 43' 21.5";

thence westerly, approximately 9112 feet to a point having California State Plane Zone 5 (SPC5) grid coordinates of 1970460.00 feet North, 6032940.00 feet East, and having a geodetic position of N 34° 23' 39.231", W 119° 45' 09.832";

thence North 68°34'30" West, 2499.87 feet grid (2500.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971373.16 feet North, 6030612.88 feet East, and having a geodetic position of N 34° 23' 47.860", W 119° 45' 37.789", the northeasterly corner and Point of Beginning of LEASE SITE No.2;

thence North 68°34'30" West, 1412.93 feet grid (1413.00 feet at mean sea level), to a point having SPC5 grid coordinates of 1971889.28 feet North, 6029297.60 feet East, and having a geodetic position of N 34° 23' 52.737", W 119° 45' 53.591";

thence South 21°25'30" West, 801.46 feet grid (801.50 feet at mean sea level), to a point having SPC5 grid coordinates of 1971143.20 feet North, 6029004.84 feet East, and having a geodetic position of N 34° 23' 45.307", W 119° 45' 56.928";

thence South 68°34'30" East, 1412.93 feet grid (1413.00 feet at mean sea level), to a point having SPC5 grid coordinates of 197062709 feet North, 6030320.12 feet East, and having a geodetic position of N 34° 23' 40.430", W 119° 45' 41.126";

thence North 21°25'30" East, 801.46 feet grid (801.50 feet at mean sea level), to the Point of Beginning.

The above geodetic SPC5 and geodetic positions are based on the NAD83 datum. The above described **LEASE SITE No. 2** contains 26.00 acres and is as shown on Exhibit B, attached hereto and made a part hereof for informational purposes.

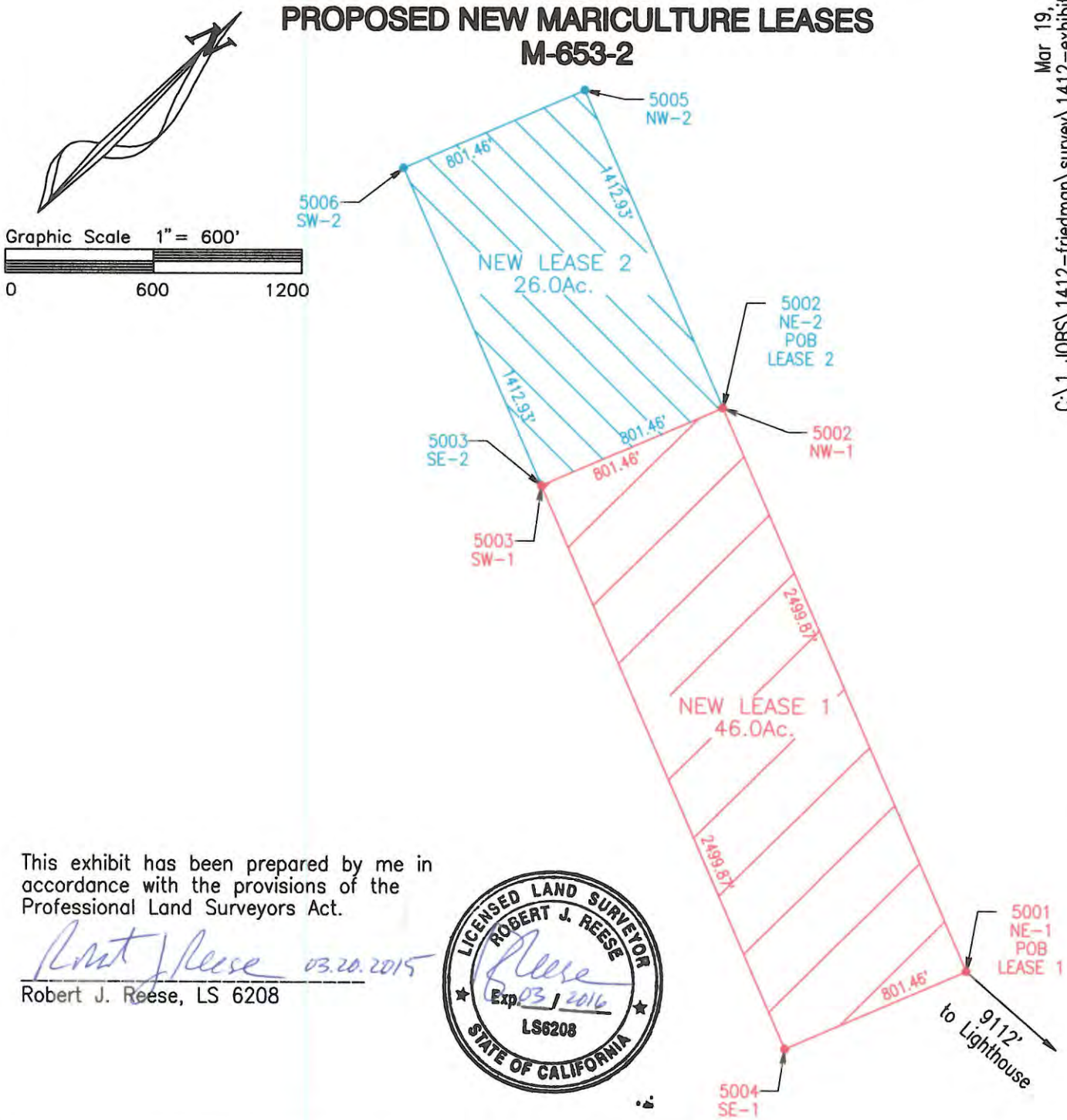
This description has been prepared by me in accordance with provisions of the Professional Land Surveyors Act.

Robert J Reese 03.20.2015

Robert J. Reese, LS 6208

LICENSED LAND SURVEYOR
ROBERT J. REESE
Exp. 03/2016
LS6208
STATE OF CALIFORNIA

EXHIBIT B
PROPOSED NEW MARICULTURE LEASES
M-653-2



Mar 19, 2015
C:\1 JOBS\1412-friedman\survey\1412-exhibitB.pro

This exhibit has been prepared by me in accordance with the provisions of the Professional Land Surveyors Act.

Robert J. Reese 03.20.2015

Robert J. Reese, LS 6208

LICENSED LAND SURVEYOR
ROBERT J. REESE
Exp. 03/2016
LS6208
STATE OF CALIFORNIA

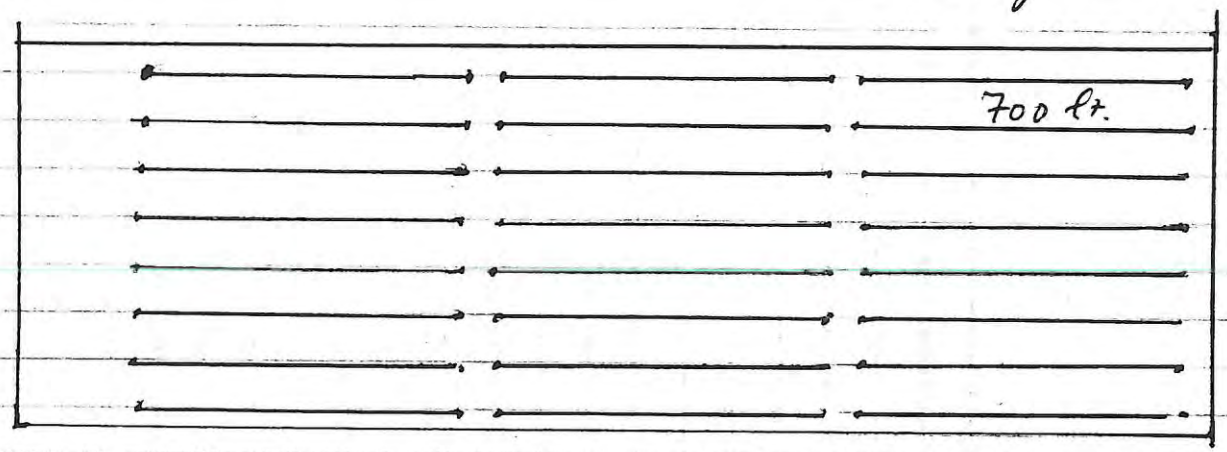
COORDINATE DATA: PROPOSED LEASE CORNERS

Pt.	Descr.	North(Y)	East(X)	N.Lat	W.Long
5001	NE-1	1970460.00	6032940.00	34°23'39.231"	119°45'09.832"
5002	NW-1	1971373.16	6030612.88	34°23'47.860"	119°45'37.789"
5003	SW-1	1970627.09	6030320.12	34°23'40.430"	119°45'41.126"
5004	SE-1	1969713.93	6032647.24	34°23'31.801"	119°45'13.170"
5005	NW-2	1971889.28	6029297.60	34°23'52.737"	119°45'53.591"
5006	SW-2	1971143.20	6029004.84	34°23'45.307"	119°45'56.928"

Santa Barbara Mariculture

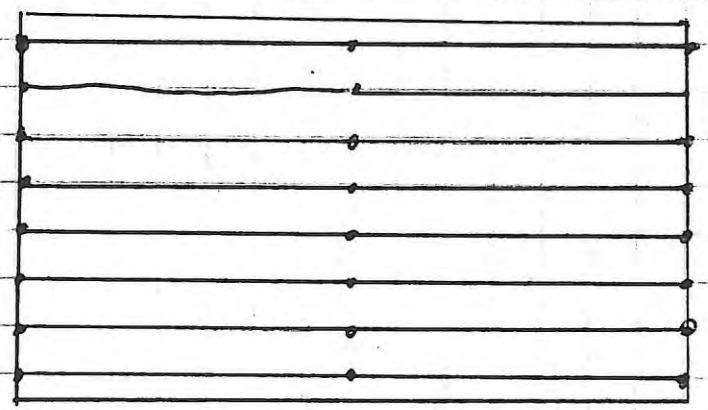
each longline = 700 ft.

Lease 1
46 acres
800 x 2500 ft



8 x 3 = 24 longlines

Lease 2
26 acres
800 x 1412 ft.



□ = 100 ft

2 x 8 = 16 longlines

Bernard Friedman
Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110

April 7, 2015

Five Year Work Plan

Currently there are 12 longlines on two-thirds of the Eastern portion of lease 1. Each longline grows 10,000 lbs. of Mediterranean mussels per year. Together, the 12 longlines produce 120,000 lbs. annually.

At the end of year five, lease 1 will hold 24 longlines which are 700 feet long from anchor to anchor. They will be installed in 3 rows of 8 parallel to the shore. The lines will be spaced 100 feet apart and each grow 10,000 lbs. of mussels per year. The projected harvest from lease 1 will be 240,000 lbs. per year.

Also at the end of year five, lease 2 will hold 16 longlines which are 700 feet long anchor to anchor. They will be installed in 2 rows of 8 parallel to shore. The lines will be spaced 100 feet apart and each grow 10,000 lbs. per year for an annual yield of 160,000 lbs..

The combined annual yield for both leases is projected to be 400,000 lbs. at the end of year 5.

During the development of the leases, in year 1, 16 longlines in lease 2 will be established as well as 8 longlines in the Western half of lease 1. The installation of these 24 longlines will take less than a week to install and consist of putting 32 screw anchors in the seafloor and joining them with 1 ¼ inch tensioned rope. The harvest from the current 12 longlines will continue at 120,000 lbs. in year 1.

Year 2 will see an increase in yield with 8 more longlines incorporated into production with an increased yield of 200,000 lbs..

Year 3 will see an increase of 12 more longlines put into production while the original 12 longlines in the Easter half will be removed and replaced with new rope and screw anchors. Yield is expected to stay the same at 200,000 lbs. Construction of a second boat and equipment is expected to begin and be completed by the beginning of year 4.

Year 4 will see an increase in production as the new boat comes on line with a total of 30 longlines used for production of 300,000 lbs. of mussels.

Year 5 will be in full production of all 40 longlines with two boats working the farm. Yields for each longline will also steadily increase with each longline steadily increasing to an annual yield of 20,000 lbs.

Production by year 10 could be upward of 800,000 lbs. of mussels with steady and managed growth.

If there is a production failure in any given year, the Pacific oyster will be cultivated to offset losses and create income until mussel production comes back on line.

Similarly, SBMC would like to diversify with the Purple hinged rock scallop and is looking for opportunities to develop commercial production of this species.

SBMC will be investigating production techniques of other species as the opportunities become available. Integrated multi-trophic mariculture systems may be the future for California, and SBMC will alter its work plan accordingly to create a sustainable future for the long term.

State of California—Health and Human Services Agency
California Department of Public Health

MICHAEL WILKENING
Acting Director

EDMUND G. BROWN JR.
Governor

February 15, 2015

Mr. Bernard Friedman
Santa Barbara Mariculture Company
4365 Cuna Dr.
Santa Barbara, CA 93110

Dear Mr. Friedman:

SHELLFISH GROWING AREA CERTIFICATE

Your application for a Shellfish Growing Area Certificate to harvest shellfish from aquaculture Lease M-653-02 in the Santa Barbara Channel has been reviewed and approved. The following Shellfish Growing Area Certificate Number has been assigned to the Santa Barbara Mariculture Company: SGA15-614 (Lease M-653-02).

This growing area is classified as ***Conditionally Approved***. Based on our review, your shellfishing operation at this growing area is currently in compliance with the requirements of Title 17, California Code of Regulations, Sections 7706 to 7733, and Section 112150 et seq. of the California Health and Safety Code, pertaining to the culture and harvesting of shellfish for human consumption.

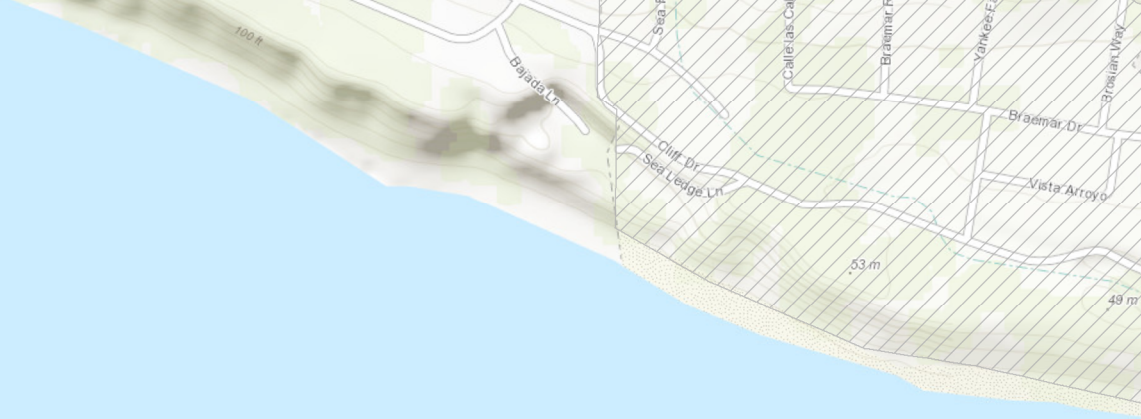
The enclosed Shellfish Growing Area Certificate contains the terms and conditions for maintaining compliance with regulatory requirements for your shellfish operation at this lease and certification of this growing area. If you have any questions, please call me at (510) 412-4635.

Sincerely,

Gregg W. Langlois, Chief
Preharvest Shellfish Unit
Environmental Management Branch

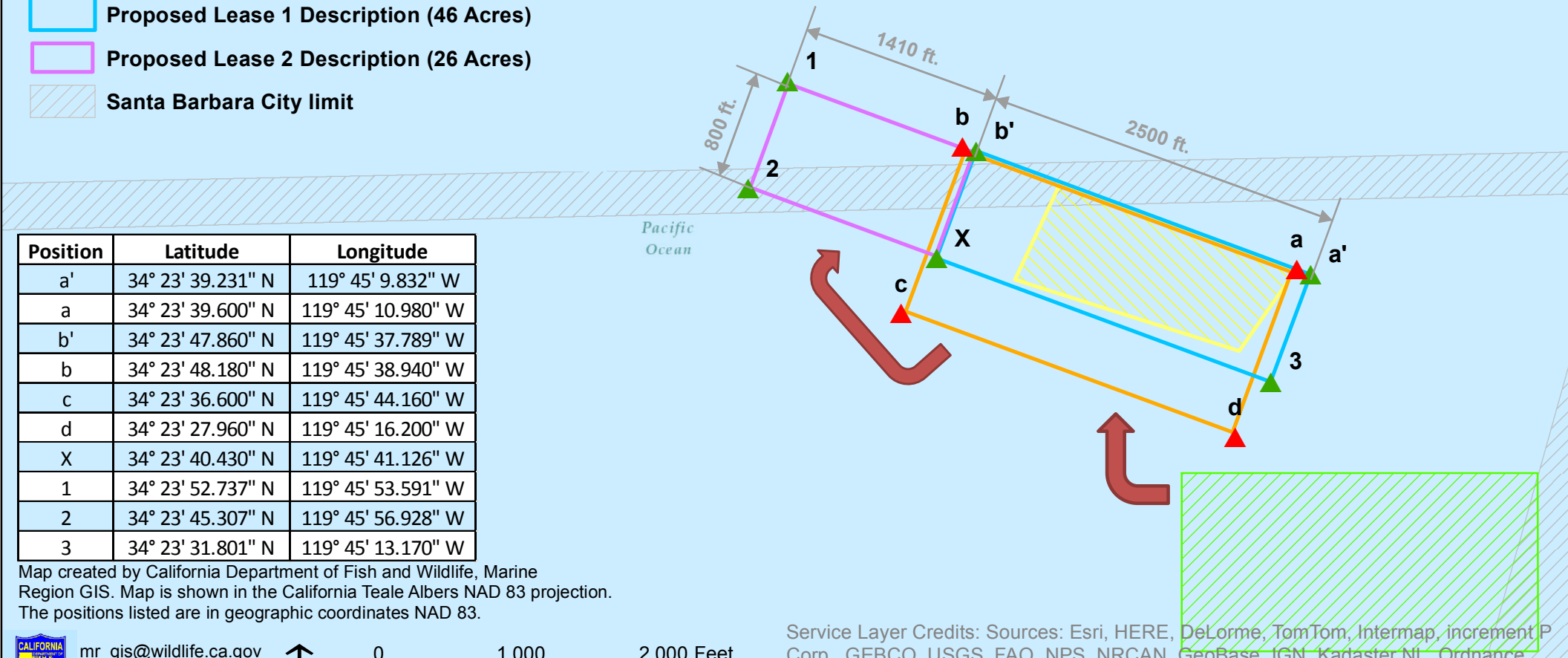
Enclosure

Santa Barbara Mariculture Lease M-653-02



Legend

- Pre Nov 2014 Description (72 Acres)
- Current Location of Gear (28 Acres)
- Current Description (72 Acres)
- Proposed Lease 1 Description (46 Acres)
- Proposed Lease 2 Description (26 Acres)
- Santa Barbara City limit



Position	Latitude	Longitude
a'	34° 23' 39.231" N	119° 45' 9.832" W
a	34° 23' 39.600" N	119° 45' 10.980" W
b'	34° 23' 47.860" N	119° 45' 37.789" W
b	34° 23' 48.180" N	119° 45' 38.940" W
c	34° 23' 36.600" N	119° 45' 44.160" W
d	34° 23' 27.960" N	119° 45' 16.200" W
X	34° 23' 40.430" N	119° 45' 41.126" W
1	34° 23' 52.737" N	119° 45' 53.591" W
2	34° 23' 45.307" N	119° 45' 56.928" W
3	34° 23' 31.801" N	119° 45' 13.170" W

Map created by California Department of Fish and Wildlife, Marine Region GIS. Map is shown in the California Teale Albers NAD 83 projection. The positions listed are in geographic coordinates NAD 83.

mr_gis@wildlife.ca.gov
May 1, 2015

0 1,000 2,000 Feet

Service Layer Credits: Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, ©

State of California
Department of Fish and Wildlife

Memorandum

Date: ~~April 29~~ May 13, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Consent Calendar Item for the June 10-11, 2015 Fish and Game Commission Meeting. Submission of White Seabass Fishery Management Plan 2013-2014 Annual Review Report**

Attached please find the report "White Seabass Fishery Management Plan 2013-2014 Annual Review".

The Department of Fish and Wildlife (Department) met with the White Seabass Scientific and Constituent Advisory Panel (WSSCAP) in April 2015 to review fishery information and to consider if current management measures were providing adequate protection for the white seabass resource. The WSSCAP evaluated fisheries data to determine if an overfished condition exists and reviewed the Points of Concern established in the White Seabass Fishery Management Plan. Although there has been a decrease in commercial landings in recent years, recreational fishing did not experience similar declines. Other factors such as water temperatures and spawning location and timing may have negatively affected commercial fishing. The WSSCAP found that an overfished condition did not exist in the 2013-2014 fishing season and no other Points of Concern were met. Thus, the Department recommends no changes to the current management of the recreational and commercial white seabass fisheries.

If you have any questions or need additional information, please contact Dr. Craig Shuman, Regional Manager of the Marine Region (Region 7) at (805) 568-0216.

Attachments

ec: Craig Shuman, D. Env.
Regional Manager
Marine Region (Region 7)
Wildlife Division

White Seabass Fishery Management Plan
2013-2014 Annual Review

Prepared by

Department of Fish and Wildlife
Marine Region
April 2015

White Seabass Fishery Management Plan
2013-2014 Annual Review

Executive Summary

The California Fish and Game Commission (Commission) adopted the White Seabass Fishery Management Plan (WSFMP) in June 2002. The WSFMP includes a provision for annual monitoring and assessment of the white seabass fisheries. The White Seabass Scientific and Constituent Advisory Panel (WSSCAP) was established to assist the Department of Fish and Wildlife (Department) and the Commission with the review of the fishery assessments, management proposals, and plan amendments. The annual review includes fishery-dependent data (e.g., commercial and recreational landings and length frequencies), and fishery-independent data (e.g., recruitment information) if available, as well as documented changes within the social and economic structure of the recreational and commercial industries that utilize the white seabass resource within California. The review also includes information on the harvest of white seabass from Mexican waters and other relevant data. Based on the results of the annual review, in cooperation with the WSSCAP, the Department will provide management recommendations, if needed, to the Commission.

To assist the Commission in determining if management measures need to be modified or added, the WSFMP framework includes, and the Commission adopted, points of concern criteria to help determine when management measures are needed to address resource issues. The points of concern are:

1. catch is expected to exceed the current harvest guideline or quota;
2. any adverse or significant change in the biological characteristics of white seabass (age composition, size composition, age at maturity or recruitment) is discovered;
3. an overfishing condition exists or is imminent;
4. any adverse or significant change in the availability of white seabass forage or in the status of a dependent species is discovered;
5. new information on the status of white seabass is discovered;
6. an error in data or stock assessment is detected that significantly changes estimates of impacts due to current management.

The Department and WSSCAP met on April 15, 2015 to review the 2013-2014 fishery season (September 1 to August 31), and together agreed that none of the points of concern were met. Additional social and economic information along with the catch information from Mexico support this conclusion. As a result, the Department does not recommend any changes to the management of white seabass or to the WSFMP at this time.

Background

The WSSCAP annually reviews current information to evaluate the status of the white seabass resource based on points of concern adopted to implement the WSFMP, and to consider whether current management measures provide adequate protection for the resource. If a resource conservation issue is found, based on the points of concern, the WSSCAP will provide its recommendation, rationale, and analysis to the Department, which will recommend to the Commission the appropriate management measure(s) to address the issue(s).

Results

Analysis of the points of concern (Table 1) showed that none of the criteria were met in 2013-2014.

Table 1. Analysis of the points of concern.

Criteria	Analysis	Result
Catch is expected to exceed the current harvest guideline or quota.	2013-2014 total catch = 481,557 pounds; Optimum Yield = 1.2 million pounds; Total catch is below optimum yield.	No action necessary
Any adverse or significant change in the biological characteristics of white seabass (age composition, size composition, age at maturity or recruitment) is discovered.	Recreational and commercial fishery length-frequencies showed no significant change that would indicate a problem in the fishery. No new information on age composition, age at maturity, or age at recruitment.	No action necessary
An overfishing condition exists or is imminent.	See analysis in Table 2. No overall overfishing condition noted.	No action necessary
Any adverse or significant change in the availability of white seabass forage or in the status of a dependent species is discovered.	Forage species are fairly stable in aggregate. Data indicate an increase in or steady availability for four of the forage species, and a decrease in availability for one of the forage species.	No action necessary
New information on the status of white seabass is discovered.	No new information.	No action necessary
An error in data or stock assessment is detected that significantly changes estimates of impacts due to current management.	No significant errors detected. Stock assessment has not been completed.	No action necessary

Point of Concern: Expectation of optimum yield being exceeded.

The Commission established a fishing season of September 1 through August 31 of the following year. The Commission also adopted an optimum yield. The optimum yield is based on a maximum sustainable yield proxy of the unfished biomass, and is currently set at 1.2 million pounds. In the 2013-2014 season, the total recreational and commercial harvest was 481,557 pounds, 40 percent of the allowable catch (Appendix A, Table 1).

Point of Concern: Changes in the biological characteristics of white seabass.

The commercial fishery continues to harvest white seabass across a wide size range (Appendix A, Figure 1). In 2013-2014, 100 percent of the fish sampled were larger than the minimum size limit of 28 inches (711 mm) and approximately two thirds of the fish sampled were larger than 45 inches (1143 mm). Based on previous age-at-length information from reading otoliths and from a previously calculated weight/length relationship, those fish larger than 45 inches are likely more than 11 years old and weigh more than 30 pounds.

Sampled length frequency data for the recreational fishery are presented in Appendix A, Figure 2. Before the start of the 2009-2010 season the Department prepared and distributed a brochure targeting recreational anglers to improve compliance with the recreational minimum size limit for white seabass. In the seasons since this brochure was distributed, less than 10 percent of the fish measured were smaller than the minimum size limit of 28 inches (711 mm). This is a significant improvement from the previous seasons, in which 17-19 percent of all fish measured were less than minimum legal size. This season 195 legal-sized fish were measured from the recreational fishery. Of the legal-sized fish measured from the recreational fishery approximately one third of the fish measured were larger than 40 inches (1016 mm) total length. There was a slight shift to catching more, smaller fish, especially between 750 mm and 850 mm than in past years. Based on the previously calculated weight/length relationship, those fish larger than 40 inches are likely more than 9 years old and weigh more than 24 pounds.

Point of Concern: An overfishing condition exists or is imminent.

Three criteria (Table 2), all of which must be met to establish a point of concern, determine if an overfishing condition exists or is imminent. For the commercial fishery, there must be a 20 percent decline in landings in each of two consecutive seasons compared to the prior 5-season running average. Commercial landings of white seabass (Appendix A, Table 2) totaled 262,441 pounds in the 2013-2014 season; this is a 39 percent decrease when compared to the prior 5-season running average (431,873 pounds). In the 2012-2013 season commercial landings totaled 315,533 pounds; this is a 37 percent decrease compared to the prior 5-season running average (499,419 pounds). The WSSCAP and the Department agreed that the overfishing criterion for the

commercial fishery was met. However, all three criteria must be met to establish a point of concern. From 1952-2014, this criterion has been met ten and eight times for the commercial and recreational fisheries, respectively; however, it has only occurred in both fisheries during the same time period twice (1960 and 1969).

For the recreational fishery, the overfishing criterion is defined as a 20 percent decline in each of two consecutive seasons for both the number of fish and the average weight (Appendix A, Table 3). In the recreational fishery, the number of fish caught in the 2013-2014 season decreased 10 percent when compared to the previous season. The average weight of fish caught in the 2013-2014 season increased 19 percent when compared to the previous season. The WSSCAP and the Department agreed that the overfishing criterion for the recreational fishery was not met.

The final criterion for determining if an overfishing condition exists is a 30 percent decline in the recruitment index for juvenile white seabass compared to the prior 5-season running average of recruitment. The Ocean Resources Enhancement and Hatchery Program (OREHP) had routinely conducted standardized field studies four times a year (August, October, April and June) for juvenile recruitment. However, reductions in funding curtailed survey effort. The Southern California Sport Fishing Enhancement Stamp fund was insufficient to cover all of the OREHP activities as well as the gill net recruitment surveys, and consequently there was no gill net sampling between 2009 and 2011.

In October 2012 gill net sampling similar to previous surveys was reinstated. The objective of the current sampling design seeks to resume the prior gill net sampling regime but in a reduced capacity with fewer locations surveyed and a reduction in the number of nets deployed at each site.

In order for this criterion to be evaluated six consecutive years of data will need to be collected. Because six years of consecutive white seabass recruitment surveys have not been completed this criterion could not be addressed in this report.

Based on the analysis of all three overfishing criteria, the WSSCAP and the Department agreed that the overall overfishing point of concern for the fishery was not met. However, because the overfishing criterion for the commercial fishery was met staff will investigate the preliminary data from the recruitment surveys and other information that could explain these continued declines.

Table 2. Analysis to determine if the white seabass resource is overfished (Criteria taken from Section 51.01 (b), Title 14, California Code of Regulations).		
Criteria	Analysis	Result
A 20 percent decline in the total annual commercial landings of white seabass for the past two consecutive seasons compared to the prior 5-season running average of landings, based on landing receipt data.	2013-2014 262,441 pounds = 39% decrease 5-season average = 431,873 pounds 2012-2013 315,533 pounds = 37% decrease 5-season average = 499,419 pounds	Criterion was met
A 20 percent decline in both the number of fish and the average weight of white seabass caught in the recreational fishery for the same two consecutive seasons, as determined by the best available data.	2013-2014 9,567 fish = 10% decrease 22.9 pound average = 19% increase 2012-2013 10,634 fish = 8% increase 19.3 pound average = 28% decrease	Criterion not met
A 30 percent decline in recruitment indices for juvenile white seabass compared to prior 5-season running average of recruitment, as determined by the best available data.	Criterion not analyzed	N/A

<u>Point of Concern: Any adverse or significant change in the availability of white seabass forage or in the status of a dependent species is discovered.</u>

Prey species (northern anchovy, jack mackerel, market squid, Pacific mackerel, and Pacific sardine) are highly mobile and their distributions are affected by oceanographic conditions. A review of white seabass forage species (Appendix A, Figures 3, 4, and 5) revealed some changes in availability.

Since there are currently no biomass estimates or stock assessments for northern anchovy, jack mackerel, and market squid, commercial fishery landings were used as a proxy for their availability. Northern anchovy and market squid availability increased from the previous year, whereas jack mackerel landings showed a small decrease but still remained at a high level.

Both Pacific mackerel and Pacific sardine have stock assessments conducted by the National Marine Fisheries Service and these stock assessments include biomass estimates. Since 2008, Pacific mackerel biomass estimates have been conducted every two years. Pacific sardine biomass estimates are conducted every year. The biomass estimates for Pacific mackerel and Pacific sardine in 2014 show decreases for

both species from their last assessment. The 2014-2015 Pacific sardine fishery closed two months early in April, and will be closed for the 2015-2016 season.

Based on the analysis of all of the prey species, the WSSCAP and the Department agreed that this point of concern was not met.

Other Points of Concern:

The remaining two points of concern (Table 1) consider any new information on the status of white seabass, and if any errors in data or stock assessment were found.

There is no new information on stock status and there were no significant errors found in the data. A stock assessment for white seabass is currently underway and is expected to be completed by the end of 2015.

Additional Information

The Department has used one indicator each of some basic social and economic information to characterize the commercial fishery and provided those summaries to the WSSCAP (Appendix A, Table 4). As a social information indicator, the number of commercial vessels landing white seabass has been tracked over time. In the 2013/14 seasons the number of vessels fishing for white seabass has decreased slightly. This decrease in the number of vessels occurred mostly in the hook-and-line fishery. An economic information indicator of the most frequent ex-vessel price per pound has also been tracked over time. The ex-vessel price per pound has shown a steady increase over time and is presently at its highest at $5.50 per pound for all gears combined. No similar social or economic data are available for the recreational fleet.

Information about the take of white seabass in Mexican waters was considered by the WSSCAP. California commercial fishermen are prohibited by Mexican law to fish in the territorial seas of Mexico, and no landings of white seabass from Mexico by California commercial fishermen were reported in 2013-2014. Recreational anglers may fish in Mexico under the authority of a Mexican sport fishing license. During the 2013-2014 season, Commercial Passenger Fishing Vessel log book data reported 23 white seabass taken in Mexico, a decrease of 160 fish from the reported 183 taken in the prior season. No additional information about either the recreational or commercial catch of white seabass in Mexico is available.

Appendix A – Data Analyses

Table 1. Total catch (pounds) of white seabass, 2004/05 - 2013/14

Season	Recreational	Commercial	Total
2004/05	128,472	287,694	416,166
2005/06	199,083	391,301	590,384
2006/07	253,959	421,388	675,347
2007/08	150,988	653,264	804,252
2008/09	152,799	414,459	567,258
2009/10	215,071	502,021	717,092
2010/11	306,491	520,605	827,096
2011/12	259,028	406,746	665,774
2012/13	265,816	315,533	581,349
2013/14	219,116	262,441	481,557

Source: California Recreational Fisheries Survey extracted from the RecFIN database at http://www.recfin.org/forms/est2004.html, and California Department of Fish and Wildlife Commercial Fisheries Information System (includes commercial landing receipt and CPFV logbook data).

Table 2. Commercial white seabass landings in pounds, 2003/04 - 2013/14

Season	Pounds Landed	Prior 5-season average	Percent change from previous 5-season average
2003/04	305,688	316,788	-4
2004/05	287,694	325,234	-12
2005/06	391,301	339,004	15
2006/07	421,388	374,126	13
2007/08	653,264	377,896	73
2008/09	414,459	411,867	1
2009/10	502,021	433,621	16
2010/11	520,605	476,487	9
2011/12	406,746	502,347	-19
2012/13	315,533	499,419	-37
2013/14	262,441	431,873	-39

Source: California Department of Fish and Wildlife Commercial Fisheries Information System (includes commercial landing receipt data).

Table 3. Recreational white seabass catch, 2004/05 - 2013/14

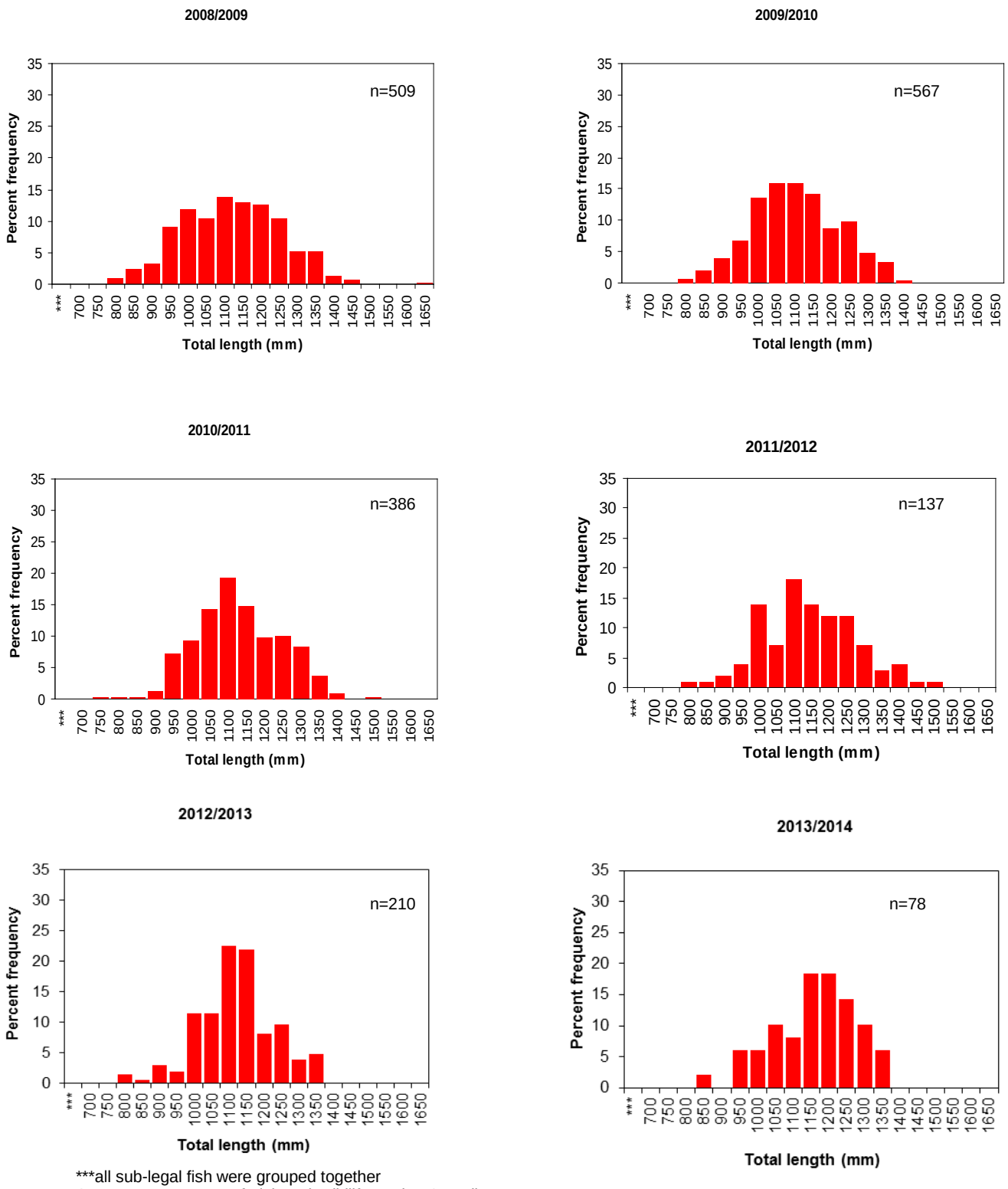
Season	Total number of fish caught	Percent change in number of fish from prior season	Average weight in pounds	Percent change in weight from prior season
2004/05	8,179	NA	15.4	NA
2005/06	10,934	34	13.1	-15
2006/07	7,261	-34	18.5	41
2007/08	7,593	5	19.3	4
2008/09	6,751	-11	19.8	3
2009/10	8,788	30	24.3	23
2010/11	12,672	44	29.1	20
2011/12	9,876	-22	26.9	-8
2012/13	10,634	8	19.3	-28
2013/14	9,567	-10	22.9	19

Source: California Recreational Fisheries Survey extracted from the RecFIN database at http://www.recfin.org/forms/est2004.html, and California Department of Fish and Wildlife Commercial Fisheries Information System (includes Commercial Passenger Fishing Vessel logbook data).

Table 4. Sociological and Economic Factors

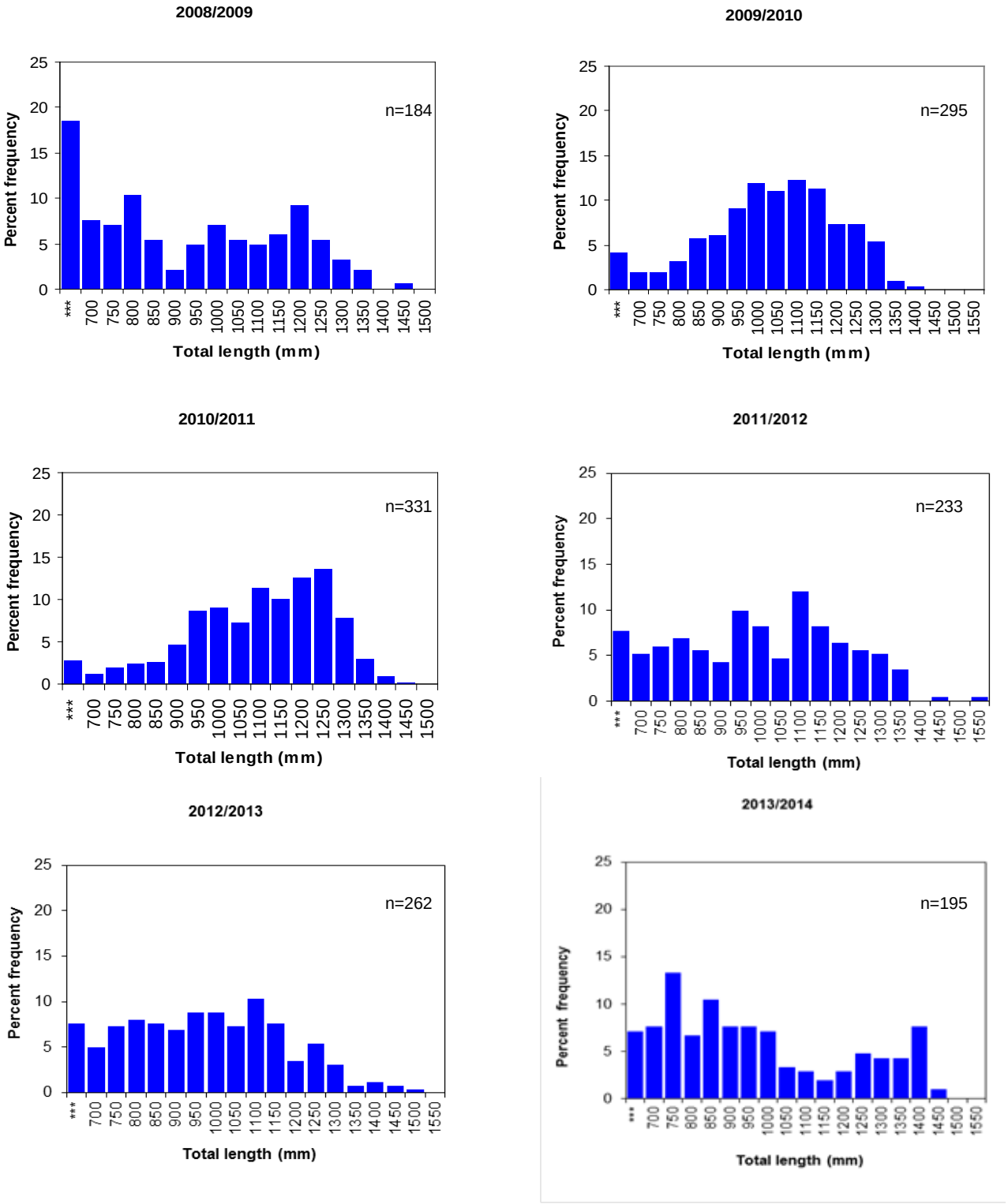
Season	Total number of vessels landing white seabass	Most common ex-vessel price per pound
2003/04	117	$2.50
2004/05	77	$2.50
2005/06	95	$3.00
2006/07	97	$3.00
2007/08	96	$3.50
2008/09	93	$3.50
2009/10	183	$3.50
2010/11	254	$4.00
2011/12	276	$4.00
2012/13	257	$5.00
2013/14	238	$5.50

Source: California Department of Fish and Wildlife Commercial Fisheries Information System (includes commercial landing receipt data).



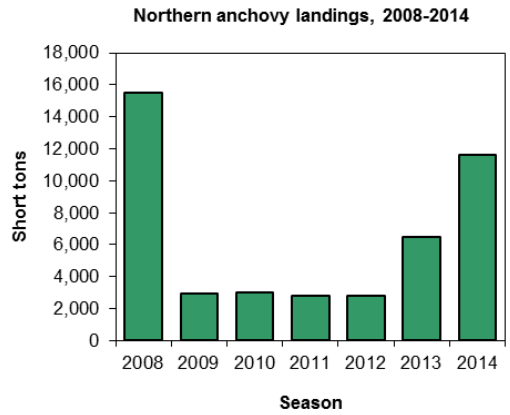
***all sub-legal fish were grouped together
Source: Department of Fish and Wildlife Market Sampling Program

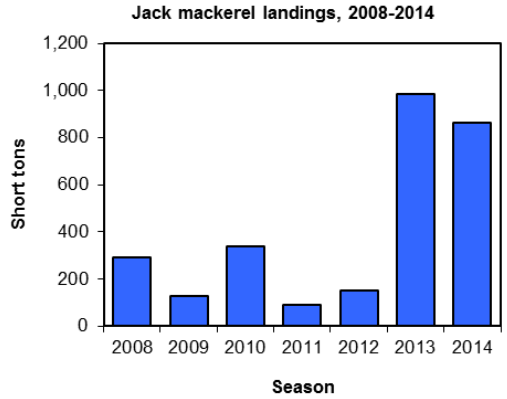
Figure 1. Commercial white seabass sampled length frequencies, 2008/09 – 2013/14.

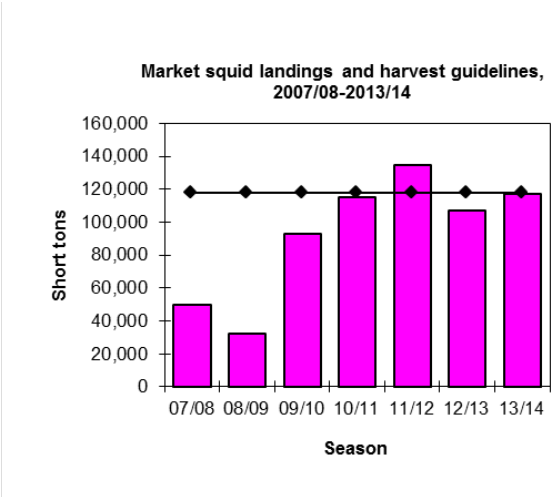


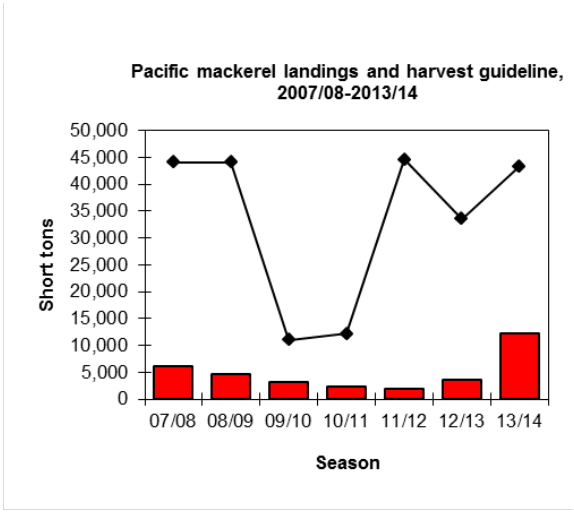
***all sub-legal fish were grouped together
Source: Sampler examined landed catch data from California Recreational Fisheries Survey extracted from the RecFIN database at http://www.recfin.org/forms/est2004.html.

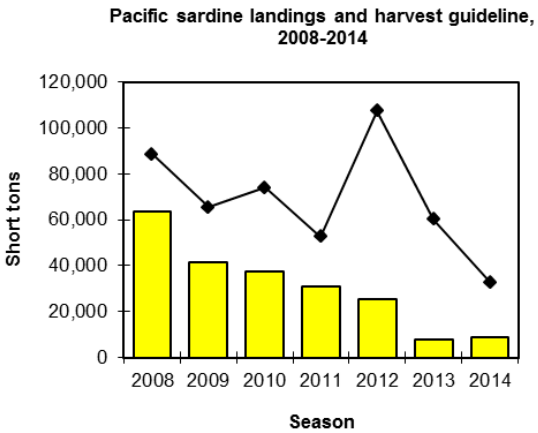
Figure 2. Recreational white seabass sampled length frequencies, 2008/09 – 2013/14.











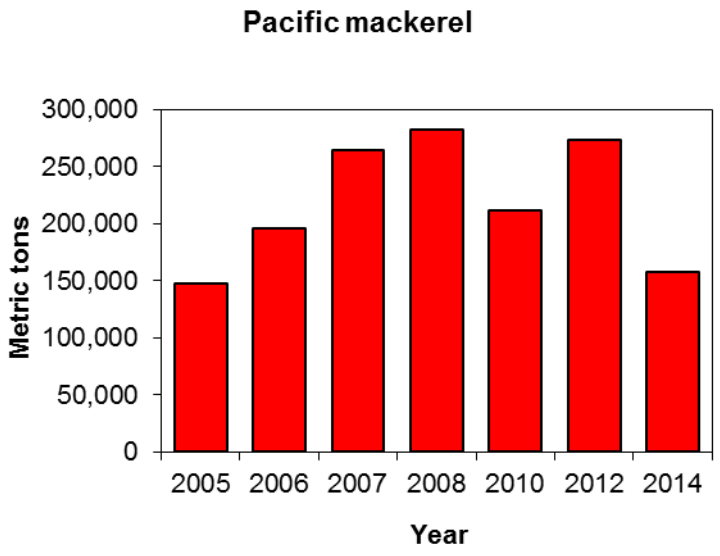
Northern anchovy, jack mackerel, and Pacific sardine season is January 1 though December 31.

Market squid season is April 1 through March 31 of the following year.

Pacific mackerel season is July 1 through June 30 of the following year.

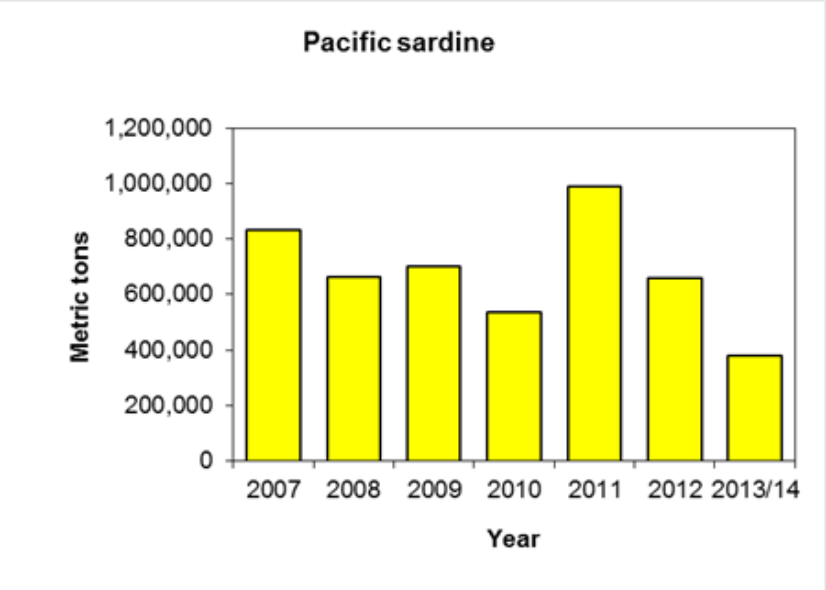
Source: California Department of Fish and Wildlife Commercial Fisheries Information System (includes commercial landing receipt and CPFV logbook data).

Figure 3. Harvest guidelines and commercial catch of white seabass forage species.



Source: Source: Pacific Fishery Management Council. 2014 CPS SAFE document and PFMC proceedings.

Figure 4. Biomass estimates for Pacific mackerel in metric tons, 2005 – 2014. Biomass estimates were biennial after 2009.



Source: Source: Pacific Fishery Management Council. 2014 CPS SAFE document and PFMC proceedings.

Figure 5. Biomass estimates for Pacific sardine in metric tons, 2007 – 2014. After 2012 the season changed from a calendar year to a seasonal year (July 1-June 30)

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State Bar No. 215721

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Attorney for the DEPARTMENT OF FISH AND WILDLIFE

OFFICE OF ADMINISTRATIVE HEARINGS
BEFORE THE FISH AND GAME COMMISSION

In the Matter of the Accusation Against Troy Tecklenburg, Respondent.	STATEMENT TO RESPONDENT

TO THE REPSONDENT ABOVE NAMED:

There is attached hereto a copy of the Accusation that has been filed with the office of the Fish and Game Commission (Commission) and is hereby served on you.

Unless a written request for a hearing signed by you or on your behalf is delivered or mailed to the Commission within 15 days after a copy of the Accusation was personally served on you or mailed to you, you will be deemed to have waived your right to a hearing in this matter, and the Commission may proceed on the Accusation without a hearing and may take action on it as provided by law.

The request for hearing may be made by delivering or mailing one of the enclosed forms entitled "Notice of Defense" or by delivering or mailing a Notice of Defense as provided in Government Code section 11506 to:

Fish and Game Commission
1416 9th St., Room 1320
Sacramento, California 95814

You may but need not be represented by counsel at any or all stages of these proceedings.

The enclosed Notice of Defense, if signed and filed with the Commission, shall be deemed a specific denial of all parts of the Accusation, but you will not be permitted to raise any objection to the form of the Accusation unless you file a further Notice of Defense as provided in Government Code section 11506 within 15 days after service of the Accusation on you.

If you file any Notice of Defense within the time permitted, a hearing will be had on the charges made in the Accusation.

The hearing may be postponed for good cause. If you have good cause, you are obliged to notify the agency or, if an administrative law judge has been assigned to the hearing, the Office of Administrative Hearings, within ten working days after you discover the good cause. Failure to give notice within ten days will deprive you of a postponement.

Copies of Government Code sections 11507.5, 11507.6 and 11507.7, are attached.

If you desire the names and addresses of witnesses or any opportunity to inspect and copy the items mentioned in Government Code section 11507.6 in possession, custody, or control of the Department of Fish and Wildlife, you may contact:

David Kiene
Department of Fish and Wildlife
Office of the General Counsel
1416 9th St., 12th Floor
Sacramento, California 95814
Telephone: (916) 654-3821

Attachments:

Accusation

Notice of Defense

Government Code sections 11507.5, 11507.6 and 11507.7

DAVID KIENE, STAFF COUNSEL
1416 9TH ST, 12TH FLOOR
SACRAMENTO, CA 95814
(916) 651-7646
(916) 654-3805 (fax)
E-mail: David.Kiene@wildlife.ca.gov
State Bar No. 215721

Attorney for the DEPARTMENT OF FISH AND WILDIFE[1]

OFFICE OF ADMINISTRATIVE HEARINGS
BEFORE THE FISH AND GAME COMMISSION

In the Matter of the Accusation Against Troy Tecklenburg, Respondent.	ACCUSATION

PARTIES

1. Complainant Department of Fish and Wildlife ("Department") brings this Accusation solely in its official capacity and not otherwise.

2. On or about March 25, 2015, the Department issued a Commercial Fishing License and Lobster Operator Permit (collectively, "Commercial Fishing Entitlements") to Troy Tecklenburg ("Respondent"). The Commercial Fishing Entitlements are in full force and effect at all times relevant in this Accusation. On or about January 14, 2015, the Department issued a sport fishing license to the Respondent.

[1] Effective January 1 2013, the Department of Fish and Game became the Department of Fish and Wildlife.

JURISDICTION

3. This Accusation is brought before the Fish and Game Commission ("Commission") under the authority of the following laws.

4. Fish and Game Code, section 86, which states:

> "Take" means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

5. Fish and Game Code, section 1054, subdivision (a) ("Section 1054(a)"), which states:

> It is unlawful to submit, or conspire to submit, any false, inaccurate, or otherwise misleading information on any application or other document offered or otherwise presented to the department for any purpose, including, but not limited to, obtaining a license, tag, permit, or other privilege or entitlement pursuant to this code or regulations adopted thereto.

6. Fish and Game Code, section 7857, subdivision (b) ("Section 7857(b)"), which states:

> The commission after notice and opportunity for hearing, may suspend, revoke, or cancel commercial fishing privileges for a period of time to be determined by the commission for the following reasons:
>
> (1) The person was not lawfully entitled to be issued the license, permit, or other entitlement.
>
> (2) A violation of this code, the terms of the permit or other entitlement, or the regulations adopted pursuant thereto, by the licensee, permittee, person holding the entitlement, or his or her agent, servant, employee, or person acting under the licensee's, permittee's, or entitled person's direction or control.
>
> (3) A violation of any federal law relating to the fishery for which the license, permit, or other entitlement was issued by the licensee, permittee, person holding the entitlement, or his or her agent, servant, employee, or person acting under the licensee's, permittee's or entitled person's direction or control.

7. Fish and Game Code, section 8033, subdivision (a) ("Section 8033(a)"), which states:

> Except as provided in Section 8033.1 or 8033.5, or subdivision (c) of Section 8047, any person who purchases or receives fish for commercial purposes from a fisherman who is required to be licensed under Section 7850, or any person who

removes fish from the point of the first landing that the person has caught for his or her own processing or sale, shall obtain a fish receiver's license.

8. Fish and Game Code, section 8251 ("Section 8251"), which states:

Spiny lobsters may be taken only between the first Wednesday in October and the first Wednesday after the 15th of March. Lobster traps may be set and baited 24 hours in advance of the opening date of the lobster season if no other attempt is made to take or possess the lobsters.

9. Fish and Game Code, section 8252 ("Section 8252"), which states:

No spiny lobster less than three and one-quarter inches in length measured in a straight line from the rear edge of the eye socket to the rear edge of the body shell, both points to be on the midline of the back, may be taken, possessed, purchased, or sold.

Every person taking spiny lobster shall carry a measuring device and shall measure any lobster immediately on removal from his trap and if it is found to be undersize the lobster shall be returned to the water immediately.

10. Fish and Game Code, section 9004 ("Section 9004"), which states:

Every trap shall be raised, cleaned, serviced, and emptied at intervals, not to exceed 96 hours, weather conditions at sea permitting, and no trap shall be abandoned in the waters of this state.

11. Fish and Game Code, section 12002, subdivision (d)(1) ("Section 12002(d)(1)"), which states:

A license, tag, stamp, reservation, permit, or other entitlement or privilege issued pursuant to this code to a defendant who fails to appear at a court hearing for a violation of this code, or who fails to pay a fine imposed pursuant to this code, shall be immediately suspended or revoked. The license, tag, stamp, reservation, permit, or other entitlement or privilege shall not be reinstated or renewed, and no other license, tag, stamp, reservation, permit, or other entitlement or privilege shall be issued to that person pursuant to this code, until the court proceeding is completed or the fine is paid.

12. California Code of Regulations, title 14, section 28.30 subdivision (a) ("Section 28.30(a)"), which states:

Kelp Bass, Barred Sand Bass and Spotted Sand Bass.
(a) Minimum size: Fourteen inches total length or ten inches alternate length.

13. California Code of Regulations, title 14, section 122, subdivision (n) ("Section 122(n)"), which states:

> (n) During the closed season for the taking of spiny lobster, no buoy attached to any trap may be marked in such manner as to identify the trap as a lobster trap, except that legally marked lobster traps may be placed in the water not more than six (6) days before the opening of the season and may remain in the water for not more than six (6) days after the close of the season, if the door or doors to such traps are wired open, the trap is unbaited, the buoy remains at the surface of the ocean, and no attempt is made to take spiny lobsters.

14. Title 14, section 746, which states in part:

> Except where revocation, suspension, transfer, reinstatement or waiver of renewal requirement procedures are specifically provided for by the Fish and Game Code or regulations made pursuant thereto, the commission, pursuant to the provisions of Section 309 of the Fish and Game Code, shall comply with the following minimum safeguards to afford each applicant, licensee or permittee procedural and substantive due process when the commission considers revocation, suspension, transfer, reinstatement or waiver of renewal requirements for a license or permit including hunting and sport fishing license or permit privileges.
>
> (a) In the case where the applicant, licensee or permittee has already been convicted of a violation of the Fish and Game Code or any regulation pertaining to the activity licensed or permitted by said code, the commission shall comply with the following:
>
> (1) The commission's president may appoint a commissioner, the commission's legal counsel, a former Executive Director of the commission, or a member of the State Bar of California with at least ten years' experience in the active practice of law and determined qualified by the president, to serve as a hearing officer.
>
> (2) The hearing shall be held at such time and location determined by the hearing officer with due consideration for the convenience of the parties and the ends of justice. The hearing officer may engage in exparte communications with the parties for the purpose of setting a time and place of hearing.
>
> (3) The commission shall notify the applicant, licensee or permittee, by certified letter, of the commission's intent to consider the revocation or suspension of his or her license or permit privileges. The certified letter shall include the following information:

(A) Name of applicant, licensee or permittee and last known address the Department of Fish and Game has on file.

(B) Date, time and place of scheduled hearing.

(C) Reason for potential commission action, including a statement as to the date and fact of conviction.

(D) A copy of Section 746, Title 14, California Code of Regulations.

(E) A statement that the applicant, licensee or permittee has the right to appear and to be represented by counsel.

(F) A statement that any continuance of the scheduled hearing date may be obtained only through compliance with subsection (d) of Section 746, Title 14, California Code of Regulations.

(4) The proceedings of the hearing shall be recorded by a court reporter or an electronic tape recording system.

(5) The hearing shall be conducted by the hearing officer who shall control the nature and order of the proceedings.

(6) At the hearing, the hearing officer shall read the conviction documents. The department shall provide the hearing officer with the background information regarding the violation and conviction and shall submit into the record a copy of a document which includes the facts of the conviction of a violation of regulation or statute.

(7) The applicant, licensee or permittee shall make his or her statement regarding the violation and conviction, and may argue that extenuating circumstances were such as to not warrant the loss of his or her license or permit privileges.

(8) The hearing officer may examine any party or witness.

(9) Within 30 days of the conclusion of the hearing, the hearing officer shall prepare and submit to the executive director a proposed decision which shall include proposed findings or reasons for the commission's action.

(10) Upon receipt of the proposed decision, the commission shall provide counsel or, if appearing pro se, the applicant, licensee or

permittee, by certified mail, a copy of the hearing officer's proposed decision.

(11) At a meeting of the commission, no later than 60 days following receipt of the hearing officer's proposed decision, the commission shall consider adoption of the proposed decision. The commission may by order adopt, revise or reject the proposed decision. The commission shall serve counsel or, if appearing pro se, the applicant, licensee or permittee, by certified mail, a copy of the commission's order and decision. The order is final.

(12) The applicant, licensee or permittee may request judicial review by filing a petition for writ of mandate in accordance with provisions of the Code of Civil Procedure within 30 days from the date of service (postmark) of the order. The record of the proceedings as designated by the petitioner shall be prepared by the commission and delivered to petitioner's counsel or, if appearing pro se, the petitioner within 30 days after petitioner's request and upon payment of the fee specified in Section 69950 of the Government Code.

FIRST CAUSE FOR DISCIPLINE

15. Respondent is subject to disciplinary action under Section 7857(b) in that Respondent violated Sections 8252, a violation for which the Commercial Fishing Entitlements may be revoked. The circumstances are as follows:

a. On or about February 14, 2015, Respondent possessed three undersized lobsters aboard his vessel, the *Bloodline*. The criminal case is pending in the Superior Court of Los Angeles County.

SECOND CAUSE FOR DISCIPLINE

16. Respondent is subject to disciplinary action under Section 7857(b) in that on or about October 3 2014, in a criminal proceeding titled *People v. Troy Tecklenburg* in the Superior Court of California, County of Los Angeles, Case Number 4CN00035, Respondent was convicted of

violating Section 8252, a violation for which the Commercial Fishing Entitlements may be revoked. The circumstances are as follows:

a. On or about March 14, 2014, Respondent possessed 18 undersized lobsters in violation of Section 8252.

b. On or about October 3, 2014, Respondent was sentenced for this violation, and others described in this Accusation, as follows: imposition of sentence suspended; probation imposed for a period of 12 months; ordered to pay fines and restitution in the amount of $671.

THIRD CAUSE FOR DISCIPLINE

17. Respondent is subject to disciplinary action under Section 7857(b) in that Respondent violated Sections 7145(a), a violation for which the Commercial Fishing Entitlements may be revoked, and for which he was cited. The circumstances are as follows:

a. On or about March 25, 2014, Respondent possessed a halibut that he had taken without a sport fishing license, in violation of Section 7145(a).

FOURTH CAUSE FOR DISCIPLINE

18. Respondent is subject to disciplinary action under Section 7857(b) in that Respondent violated Sections 1054(a), a violation for which the Commercial Fishing Entitlements may be revoked. The circumstances are as follows:

a. On or about March 25, 2014, Respondent informed a warden that he had a then current 2014 sport fishing license, but not in his possession. Respondent had no current sport fishing license.

FIFTH CAUSE FOR DISCIPLINE

19. Respondent is subject to disciplinary action under Section 7857(b) in that on or about January 9, 2014, in a criminal proceeding titled *People v. Troy Tecklenburg* in the Superior Court of California, County of Los Angeles, Case Number 2060903, Respondent pled no contest to a violation of Section 28.30, a violation for which the Commercial Fishing Entitlements may be revoked. The circumstances are as follows:

a. On or about May 17, 2013, Respondent possessed a barred sand bass under 14 inches.

b. On or about May 17, 2013, Respondent (who failed to appear) was sentenced for this violation, and others described in this Accusation, as follows: ordered to pay $923.

SIXTH CAUSE FOR DISCIPLINE

20. Respondent is subject to disciplinary action under Section 7857(b) in that Respondent violated Section 122(n), a violation for which the Commercial Fishing Entitlements may be revoked. The circumstances are as follows:

a. On or about March 27, 2013, Respondent left about 50 closed and baited lobster traps in the water, seven days after the close of the 2012-2013 season, which occurred on March 20, 2013. Permittees may only leave open and unbaited lobster traps in the water a maximum of six days after the season ends.

SEVENTH CAUSE FOR DISCIPLINE

21. Respondent is subject to disciplinary action under Section 7857(b) in that Respondent violated Section 9004, a violation for which the Commercial Fishing Entitlements may be revoked. The circumstances are as follows:

b. On or about March 27, 2013, Respondent raised, cleaned, serviced, and emptied about 50 lobster traps placed in the water. The last time he had raised, cleaned, serviced, and emptied his trap was on March 20, 2013, seven days earlier. Permittees must raise, clean, service, and empty traps at intervals, not to exceed 96 hours.

EIGHT CAUSE FOR DISCIPLINE

22. Respondent is subject to disciplinary action under Section 7857(b) in that Respondent violated Section 8251, a violation for which the Commercial Fishing Entitlements may be revoked. The circumstances are as follows:

c. On or about March 27, 2013, Respondent possessed lobsters in two traps, seven days after the close of the season.

Previous Disciplinary Action

23. Pursuant to Section 12002(d)(1), on or about September 18, 2014, the Department suspended Respondent's commercial lobster fishing privileges for failing to appear at a June 20, 2014 hearing (*People v. Troy Tecklenburg*, Superior Court of California, County of Los Angeles, Case Number 4CN00035), until the court proceeding was completed and the fines were paid. The suspension ended on or about December 10, 2014, when the case concluded and Respondent paid $521 in fines.

PRAYER

25. WHEREFORE, Complainant prays that a hearing be held on the charges and that thereafter the Fish and Game Commission issues a decision:

(1) Permanently revoking Respondent's Commercial Fishing License and Lobster Operator Permit.

(2) Warning Respondent not to commit any additional violation of the Fish and Game Code or regulations adopted pursuant to the Fish and Game Code, or else his sport fishing privileges could be suspended or revoked.

(3) Taking such other and further action as may be deemed just and proper.

Dated this 07 day of April, 2015

FOR

DAVID BESS,
CHIEF,
LAW ENFORCEMENT
DIVISION

VERIFICATION

I, David Bess, the undersigned, say:

I am a party to this action; the above document is true of my own knowledge, except as to the matters that are stated in it on my information and belief, and as to those matters I believe it to be true.

I declare under penalty of perjury that the above is true and correct and that this declaration was executed on April 07, 2015, at 1416 Ninth St., Sacramento, CA 95814.

Date: 04/07/15

FOR

DAVID BESS

Declarant

Government Code sections 11507.5-11507.7

11507.5. The provisions of Section 11507.6 provide the exclusive right to and method of discovery as to any proceeding governed by this chapter.

11507.6. After initiation of a proceeding in which a respondent or other party is entitled to a hearing on the merits, a party, upon written request made to another party, prior to the hearing and within 30 days after service by the agency of the initial pleading or within 15 days after the service of an additional pleading, is entitled to (1) obtain the names and addresses of witnesses to the extent known to the other party, including, but not limited to, those intended to be called to testify at the hearing, and (2) inspect and make a copy of any of the following in the possession or custody or under the control of the other party:

(a) A statement of a person, other than the respondent, named in the initial administrative pleading, or in any additional pleading, when it is claimed that the act or omission of the respondent as to this person is the basis for the administrative proceeding;

(b) A statement pertaining to the subject matter of the proceeding made by any party to another party or person;

(c) Statements of witnesses then proposed to be called by the party and of other persons having personal knowledge of the acts, omissions or events which are the basis for the proceeding, not included in (a) or (b) above;

(d) All writings, including, but not limited to, reports of mental, physical and blood examinations and things which the party then proposes to offer in evidence;

(e) Any other writing or thing which is relevant and which would be admissible in evidence;

(f) Investigative reports made by or on behalf of the agency or other party pertaining to the subject matter of the proceeding, to the extent that these reports (1) contain the names and addresses of witnesses or of persons having personal knowledge of the acts, omissions or events which are the basis for the proceeding, or (2) reflect matters perceived by the investigator in the course of his or her investigation, or (3) contain or include by attachment any statement or writing described in (a) to (e), inclusive, or summary thereof.

For the purpose of this section, "statements" include written statements by the person signed or otherwise authenticated by him or her, stenographic, mechanical, electrical or other recordings, or transcripts thereof, of oral statements by the person, and written reports or summaries of these oral statements.

Nothing in this section shall authorize the inspection or copying of any writing or thing which is privileged from disclosure by law or otherwise made confidential or protected as the attorney's work product.

11507.7. (a) Any party claiming the party's request for discovery pursuant to Section 11507.6 has not been complied with may serve and file with the administrative law judge a motion to compel discovery, naming as respondent the party refusing or failing to comply with Section 11507.6. The motion shall state facts showing the respondent party failed or refused to comply with Section 11507.6, a description of the matters sought to be discovered, the reason or reasons why the matter is discoverable under that section, that a reasonable and good faith attempt to contact the respondent for an informal resolution of the issue has been made, and the ground or grounds of respondent's refusal so far as known to the moving party.

(b) The motion shall be served upon respondent party and filed within 15 days after the respondent party first evidenced failure or refusal to comply with Section 11507.6 or within 30 days after request was made and the party has failed to reply to the request, or within another time provided by stipulation, whichever period is longer.

(c) The hearing on the motion to compel discovery shall be held within 15 days after the motion is made, or a later time that the administrative law judge may on the judge's own motion for good cause determine. The respondent party shall have the right to serve and file a written answer or other response to the motion before or at the time of the hearing.

(d) Where the matter sought to be discovered is under the custody or control of the respondent party and the respondent party asserts that the matter is not a discoverable matter under the provisions of Section 11507.6, or is privileged against disclosure under those provisions, the administrative law judge may order lodged with it matters provided in subdivision (b) of Section 915 of the Evidence Code and examine the matters in accordance with its provisions.

(e) The administrative law judge shall decide the case on the matters examined in camera, the papers filed by the parties, and such oral argument and additional evidence as the administrative law judge may allow.

(f) Unless otherwise stipulated by the parties, the administrative law judge shall no later than 15 days after the hearing make its order denying or granting the motion. The order shall be in writing setting forth the matters the moving party is entitled to discover under Section 11507.6. A copy of the order shall forthwith be served by mail by the administrative law judge upon the parties. Where the order grants the motion in whole or in part, the order shall not become effective until 10 days after the date the order is served. Where the order denies relief to the moving party, the order shall be effective on the date it is served.

Government Code sections 11507.5-11507.7

11507.5. The provisions of Section 11507.6 provide the exclusive right to and method of discovery as to any proceeding governed by this chapter.

11507.6. After initiation of a proceeding in which a respondent or other party is entitled to a hearing on the merits, a party, upon written request made to another party, prior to the hearing and within 30 days after service by the agency of the initial pleading or within 15 days after the service of an additional pleading, is entitled to (1) obtain the names and addresses of witnesses to the extent known to the other party, including, but not limited to, those intended to be called to testify at the hearing, and (2) inspect and make a copy of any of the following in the possession or custody or under the control of the other party:

(a) A statement of a person, other than the respondent, named in the initial administrative pleading, or in any additional pleading, when it is claimed that the act or omission of the respondent as to this person is the basis for the administrative proceeding;

(b) A statement pertaining to the subject matter of the proceeding made by any party to another party or person;

(c) Statements of witnesses then proposed to be called by the party and of other persons having personal knowledge of the acts, omissions or events which are the basis for the proceeding, not included in (a) or (b) above;

(d) All writings, including, but not limited to, reports of mental, physical and blood examinations and things which the party then proposes to offer in evidence;

(e) Any other writing or thing which is relevant and which would be admissible in evidence;

(f) Investigative reports made by or on behalf of the agency or other party pertaining to the subject matter of the proceeding, to the extent that these reports (1) contain the names and addresses of witnesses or of persons having personal knowledge of the acts, omissions or events which are the basis for the proceeding, or (2) reflect matters perceived by the investigator in the course of his or her investigation, or (3) contain or include by attachment any statement or writing described in (a) to (e), inclusive, or summary thereof.

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11507.7. (a) Any party claiming the party's request for discovery pursuant to Section 11507.6 has not been complied with may serve and file with the administrative law judge a motion to compel discovery, naming as respondent the party refusing or failing to comply with Section 11507.6. The motion shall state facts showing the respondent party failed or refused to comply with Section 11507.6, a description of the matters sought to be discovered, the reason or reasons why the matter is discoverable under that section, that a reasonable and good faith attempt to contact the respondent for an informal resolution of the issue has been made, and the ground or grounds of respondent's refusal so far as known to the moving party.

(b) The motion shall be served upon respondent party and filed within 15 days after the respondent party first evidenced failure or refusal to comply with Section 11507.6 or within 30 days after request was made and the party has failed to reply to the request, or within another time provided by stipulation, whichever period is longer.

(c) The hearing on the motion to compel discovery shall be held within 15 days after the motion is made, or a later time that the administrative law judge may on the judge's own motion for good cause determine. The respondent party shall have the right to serve and file a written answer or other response to the motion before or at the time of the hearing.

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DAVID KIENE, STAFF COUNSEL
1416 9TH ST, 12TH FLOOR
SACRAMENTO, CA 95814
(916) 651-7646
(916) 654-3805 (fax)
e-mail: David.Kiene@wildlife.ca.gov
State Bar No. 215721

Attorney for the DEPARTMENT OF FISH AND WILDIFE

OFFICE OF ADMINISTRATIVE HEARINGS
BEFORE THE FISH AND GAME COMMISSION

In the Matter of the Accusation Against Troy Tecklenburg, Respondent.	NOTICE OF DEFENSE (Under Govt. Code § 11506)

I, the undersigned, the respondent named in the above-entitled proceeding, hereby acknowledge receipt of a copy of the Accusation, Statement to Respondent, Government Code sections 11507.5, 11507.6, and 11507.7, and two copies of a Notice of Defense.

I hereby request a hearing in said proceeding to permit me to present a defense to the charges contained in said Accusation.

Date:_____

_____
Troy Tecklenburg
Respondent

If you plan to be represented by counsel, please fill in the name, address, and telephone number below.

Name: _____

Address: _____

_____

_____

_____

DAVID KIENE, STAFF COUNSEL
1416 9TH ST, 12TH FLOOR
SACRAMENTO, CA 95814
(916) 651-7646
(916) 654-3805 (fax)
e-mail: David.Kiene@wildlife.ca.gov
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OFFICE OF ADMINISTRATIVE HEARINGS
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In the Matter of the Accusation Against Troy Tecklenburg, Respondent.	NOTICE OF DEFENSE (Under Govt. Code § 11506)

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I hereby request a hearing in said proceeding to permit me to present a defense to the charges contained in said Accusation.

Date:_____

_____
Troy Tecklenburg
Respondent

If you plan to be represented by counsel, please fill in the name, address, and telephone number below.

Name: _____

Address: _____

_____

_____

_____

Commissioners
Jack Baylis, President
Los Angeles
Jim Kellogg, Vice President
Discovery Bay
Richard Rogers, Member
Santa Barbara
Michael Sutton, Member
Monterey
Jacque Hostler-Carmesin, Member
McKinleyville

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Wildlife Heritage and Conservation
Since 1870

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
(916) 653-5040 Fax
www.fgc.ca.gov

CERTIFIED MAIL

May 20, 2015

Mr. Troy Tecklenburg

Huntington Beach, CA

Dear Mr. Tecklenburg:

This letter is regarding the permanent revocation of your Commercial Fishing License Number L84668 and Lobster Operator Permit Number LOT909, per the request of the California Department of Fish and Wildlife (Department).

In April 2015 The Department sent a warden to your home to deliver the accusation to you, but no one answered the door. At the same time, via certified mail, the Department mailed to your address on file its accusation and request for the California Fish and Game Commission (Commission) to permanently revoke your commercial fishing license and lobster operator permit (see enclosure); your response to the accusation was required within 15 days if you wished to appeal the Department's request.

The certified mail package sent to your address on file was not claimed. California Government Code, Section 11505(c) states, in part:

> "Service may be proved in the manner authorized in civil actions. Service by registered mail shall be effective if a statute or agency rule requires the respondent to file the respondent's address with the agency and to notify the agency of any change, and if a registered letter containing the accusation or District Statement of Reduction in Force and accompanying material is mailed, addressed to the respondent at the latest address on file with the agency."

As the holder of a commercial fishing license and lobster operator permit, you are required to keep current your address on file with the Department. Per Government Code, Section 11505(c), you have been served notice and the Commission did not

receive from you a request to appeal the requested revocation. Action on your license and permit revocation will be considered by the Commission at its June 10-11, 2015 meeting in Mammoth Lakes under consent. You will receive a copy of the final decision after the meeting.

If you have any questions or would like to discuss this matter, please contact Melissa Miller-Henson of my staff at 916.653.6184 or Melissa.Miller-Henson@fgc.ca.gov.

Sincerely,

Sonke Mastrup
Executive Director

Enclosure

ec: Christopher Ames, Office of the Attorney General, California Department of Justice, Christopher.Ames@doj.ca.gov
California Department of Fish and Wildlife:
David Kiene, Office of the General Counsel, David.Kiene@wildlife.ca.gov
David Bess, Law Enforcement Division, David.Bess@wildlife.ca.gov
James Fong, License and Revenue Branch, James.Fong@wildlife.ca.gov
Vandella Campbell, License and Revenue Branch, Vandella.Campbell@wildlife.ca.gov

State of California – Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
1416 9th Street, Ste. 1341
Sacramento, CA 95814
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

May 27, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Subject: Troy Tecklenburg Lobster Operator Permit and Commercial Fishing License Revocations

Dear Commissioners:

Attached are materials in support of the Department of Fish and Wildlife's ("Department") Accusation in the matter of the *Accusation against Troy Tecklenburg* ("Accusation "), including conviction documents and wildlife officer narratives describing the facts of his violations. This matter is on the consent calendar of the agenda for the June 11-12, 2015 meeting. The Department is respectfully requesting that the Fish and Game Commission ("Commission") permanently revoke Mr. Tecklenburg's commercial fishing license and lobster operator permit, and issue a warning not to commit any additional violation of the Fish and Game Code or fishing regulations or else his sport fishing privileges could be suspended or revoked.

This revocation is before the Commission without a formal hearing because Mr. Tecklenburg has waived his right to a hearing. On April 14, 2015, the Department lawfully served him with the Accusation by sending it certified mail.[1] Mr. Tecklenburg received it on April 17, 2015, yet declined to send a Notice of Defense requesting a hearing within 15 days of receiving the Accusation.[2] In fact, Mr. Tecklenburg never bothered to claim the Accusation even after a wildlife officer personally contacted him and told him the Department had sent him time-sensitive materials. Mr. Tecklenburg acknowledged to the wildlife officer that he had received

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[1] Government code, section 11505, subdivision (c) states, in part, "Service by registered mail shall be effective if a statute or agency rule requires the respondent to file the respondent's address with the agency and to notify the agency of any change, and if a registered letter containing the accusation or District Statement of Reduction in Force and accompanying material is mailed, addressed to the respondent at the latest address on file with the agency." Fish and Game Code, section 7857, subdivision (m) states, "A person who holds a commercial fishing license, permit, registration, or other entitlement, who moves or acquires a new address shall notify the department of the old and new addresses within three months of acquiring the new address ."

[2] Government Code, section 11506 ("Section 11506"), subdivision (a) states, in part, "Within 15 days after service of the accusation or District Statement of Reduction in Force the respondent may file with the agency a notice of defense, or, as applicable, notice of participation, in which the respondent may: (1) Request a hearing." Section 11506, subdivision (c) states, in part, "The respondent shall be entitled to a hearing on the merits if the respondent files a notice of defense or notice of participation, and the notice shall be deemed a specific denial of all parts of the accusation or District Statement of Reduction in Force not expressly admitted. Failure to file a notice of defense or notice of participation shall constitute a waiver of respondent's right to a hearing, but the agency in its discretion may nevertheless grant a hearing."

the Accusation and stated that he would open it. Mr. Tecklenburg also acknowledged seeing a different wildlife officer at his house several days earlier who had unsuccessfully attempted to serve him the Accusation because he refused to answer his door. On May 5, 2015, the United States Postal Service returned the unclaimed Accusation to the Department.

As described in the Accusation, Mr. Tecklenburg has committed multiple violations of the Fish and Game Code and regulations adopted pursuant to the Fish and Game Code. These violations include:

- February 14, 2015, possessing undersized lobster (the criminal case is pending), in violation of Fish and Game Code, section 8252.[3] ("Section 8252"; Exhibit A.)
- March 25, 2014, possessing a halibut that he had taken without a sport fishing license, in violation of Fish and Game Code, section 7145, subdivision (a).[4] (Exhibit B.)
- March 25, 2014, providing false information to a wildlife officer by saying he had possessed a sport fishing license, when he had no such license, in violation of Fish and Game Code, section 1054.[5] (Exhibit B.)
- March 14, 2014, possessing 18 undersized lobster in violation of Section 8252. Mr. Tecklenburg was convicted of this violation on October 3, 2014. (Exhibit C.) Mr. Tecklenburg's lobster operator permit was suspended September 18, 2014 until December 10, 2014, because he had failed to appear at a court hearing related to this violation. (Exhibit D.) Notwithstanding this suspension, Mr. Tecklenburg violated Section 8252 again on February 14, 2015 (see above).
- May 17, 2013, possessing a barred sand bass smaller than the 14 inch size limit, in violation of C.C.R., title 14, section 28.30.[6] Mr. Tecklenburg was convicted of this violation on January 9, 2014. (Exhibit E.)
- March 27, 2013, Mr. Tecklenburg left about 50 closed and baited lobster traps in the water, seven days after the close of the 2012-2013 season, in violation of C.C.R., title 14,

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[3] Section 8252 states, in part, "No spiny lobster less than three and one-quarter inches in length measured in a straight line from the rear edge of the eye socket to the rear edge of the body shell, both points to be on the midline of the back, may be taken, possessed, purchased, or sold."

[4] Fish and Game Code, section 7145, subdivision (a) states, in part, "Except as otherwise provided in this article, every person 16 years of age or older who takes any fish, reptile, or amphibian for any purpose other than profit shall first obtain a valid license for that purpose and shall have that license on his or her person or in his or her immediate possession or where otherwise specifically required by law or regulation to be kept when engaged in carrying out any activity authorized by the license."

[5] Fish and Game Code, section 1054, subdivision (a) states, "It is unlawful to submit, or conspire to submit, any false, inaccurate, or otherwise misleading information on any application or other document offered or otherwise presented to the department for any purpose, including, but not limited to, obtaining a license, tag, permit, or other privilege or entitlement pursuant to this code or regulations adopted thereto."

[6] C.C.R., title 14, section 28.30 states, "Kelp Bass, Barred Sand Bass and Spotted Sand Bass. (a) Minimum size: Fourteen inches total length or ten inches alternate length. (b) Limit: Five in any combination of species."

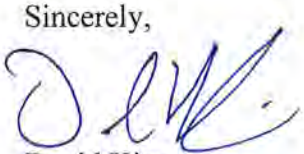
section 122, subdivision (n).[7] Two of these traps contained lobsters, resulting in an additional violation of Fish and Game Code, section 8251.[8] Also on this date, Mr. Tecklenburg raised, cleaned, serviced and emptied his traps seven days after previously raising, cleaning, servicing, and emptying his traps, in excess of the four days allowed between raising, cleaning, servicing, and emptying traps, in violation of Fish and Game Code, section 9004.[9] (Exhibit F.)

Thus, Mr. Tecklenburg has shown that he cannot be trusted to follow fishing laws. Neither criminal convictions nor a suspension has deterred Mr. Tecklenburg, nor have such actions adequately protected fishery resources. Fish and Game Code, section 7857, subdivision (b)(2), states in part that the Commission may permanently revoke a commercial fishing entitlement for "A violation of this code, the terms of the permit or other entitlement, or the regulations adopted pursuant thereto."

To prevent further unlawful conduct and abuse of fishery resources, the Department respectfully requests that the Commission permanently revoke Mr. Tecklenburg's lobster operator permit, commercial fishing license, and warn him that an additional violation could jeopardize his ability to possess a sport fishing license.

If you have any questions, please do not hesitate to contact me at the above address, telephone number (916) 651-7646, or by e-mail at David.Kiene@wildlife.ca.gov.

Sincerely,



David Kiene
Senior Staff Counsel

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[7] C.C.R., title 14, section 122, subdivision (n), states, "During the closed season for the taking of spiny lobster, no buoy attached to any trap may be marked in such manner as to identify the trap as a lobster trap, except that legally marked lobster traps may be placed in the water not more than six (6) days before the opening of the season and may remain in the water for not more than six (6) days after the close of the season, if the door or doors to such traps are wired open, the trap is unbaited, the buoy remains at the surface of the ocean, and no attempt is made to take spiny lobsters."

[8] Fish and Game Code, section 8251, states, in part, "Spiny lobsters may be taken only between the first Wednesday in October and the first Wednesday after the 15th of March."

[9] Fish and Game Code, section 9004, states, "Every trap shall be raised, cleaned, serviced, and emptied at intervals, not to exceed 96 hours, weather conditions at sea permitting, and no trap shall be abandoned in the waters of this state."

Exhibit A

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

WPD 6a (10-98)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL
02/14/2015	1315	Offshore San Pedro, Los Angeles County, Deukmejian Court House

"X" ONE	"X" ONE	TYPE OF REPORT ("X" *APPLICABLE*)
[X] Arrest Report [ ] Formal Complaint	[X] Self Initiated [ ] Complaint	[X] Commercial Fishing [ ] Hunting [ ] Inland Pollution [ ] CalTIP [ ] Recreational Fishing [ ] Trapping [ ] Marine Pollution [ ] Other

Suspect Information

Name Suspect #1 (*First, Middle, Last*)	Sex	Date of Birth	Citation Number
Troy Leith Tecklenburg	[X] M [ ] F	(*MM/DD/YY*) [redacted]	**AD2065982**

Suspect Address (*Street, Apt., City, State, Zip Code*)	Home Phone
[redacted]	[redacted]

Business Address (*Street, Apt., City, State, Zip Code*)	Business Phone
N/A	--

Identification Type	Suspect Description ("X" *APPLICABLE*)
("X"*APPLICABLE*) [X] CDL/CID [ ]Other State DL/ID [] Other ID: Number: [redacted]	GENERAL: HAIR: EYES: ETHNICITY: [redacted] Height: Weight:

Vehicle Type ("X" *APPLICABLE*)	Description (*Make, Model, Year, Color*)	License Plate Number/VIN
[]Auto [X]Vessel [ ]Other	FV BLOODLINE, [redacted] 28', 1983, Grey	[redacted]

Name Suspect #2 (*First, Middle, Last*)	Sex	Date of Birth	Citation Number
	[ ] M [ ] F	(*MM/DD/YY*)	

Suspect Address (*Street, Apt., City, State, Zip Code*)	Home Phone

Business Address (*Street, Apt., City, State, Zip Code*)	Business Phone
N/A	--

Identification Type	Suspect Description ("X" *APPLICABLE*)
("X"*APPLICABLE*) [ ] CDL/CID [ ]Other State DL/ID [] Other ID: Number:	GENERAL: HAIR: EYES: ETHNICITY: Height:___ [ ]Bln [ ]Blk [ ]Brn [ ]Blu [ ]Brn [ ]Asian [ ]Black []Hispanic Weight:___ [ ]Gry [ ]Red [ ]None [ ]Grn [ ]Hzl [ ]White [ ]Other:

Vehicle Type ("X" *APPLICABLE*)	Description (*Make, Model, Year, Color*)	License Plate Number/VIN
[]Auto [ ]Vessel [ ]Other		

Offenses and Charges

[X]F&G [X]T-14 [ ]Other: Section: 8252 Description: Commercial possession of short lobsters (3 counts)	[ ]F&G [ ]T-14 [ ]Other: [ ]Section: Description:
[ ]F&G [ ]T-14 []Other: Section: Description:	[ ]F&G [ ]T-14 [ ]Other: [ ]Section: Description:

Evidence Seized

Evidence Description (*Amount, Type, Serial Number, etc.*) " X" ONE [ ]Held []Returned [ ]Destroyed [x]Other	Evidence Photographed?
3 undersized lobsters, returned to the water..	[x]Yes [ ]No

Case Synopsis

On 02/14/2015, while on skiff patrol, I boarded and conducted an inspection of the FV Bloodline, during the inspection I discovered three undersized CA spiny lobster in the possession of the owner / operator Troy Tecklenburg.

See WPD 6b For Additional Suspect and Witness Information "X" ONE [ ]Yes [x]NO

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
A. Bagdasaryan # 820	02/20/2015	Wes Boyle	

ARREST/INVESTIGATION REPORT

Criminal History

On 03-25-2014, Warden A. Oratovsky #783 issued Tecklenburg a citation per Fish and Game Code (FGC), section 2002, unlawful possession of a halibut to wit FGC, section 7145(a), fishing without a sport fishing license in possession.

On 03-14-2014, Warden Holemo # 769 issued Tecklenburg a citation per **FGC 8252- Commercial possession of short lobsters (18 counts)**, FGC 7850- Guest on commercial boat shall record his presence on commercial boat log, FGC 7856(f) - Sport fishing while on a commercial fishing trip, and CCR T-14 190- No commercial record kept for catch.

On 05-17-2013, Warden L. Arkinstall #819 issued Tecklenburg a citation per CCR T-14, section 28.30(a), possession of a sand bass less than 14 inches.

On 03-27-2013, Warden Oratovsky #783 issued Tecklenburg a citation for FGC 8251- Take of lobster out of season, FGC 9004-Failure to check traps within 96 hours, and CCR T-14 122(n)- Traps left past 6 days after close of lobster season.

Narrative

The commercial fishing vessel (FV) BLOODLINE, formally known as the FV HIGH LIFE ([redacted], CF 0864 HP) is a 28 foot commercial lobster fishing vessel. The FV BLOODLINE is commercially registered with the California Department of Fish & Wildlife and is owned and operated by Troy Tecklenburg who currently holds a lobster operator permit along with a commercial fishing license.

On 02/14/2015, I was on skiff patrol with Warden Louden near San Pedro. At approximately 1315 hours, I observed the FV BLOODLINE with one person onboard fishing with a rod and reel offshore Cabrillo Beach. It was later discovered that there was another person onboard the vessel, registered in the fishing activity log as an observer.

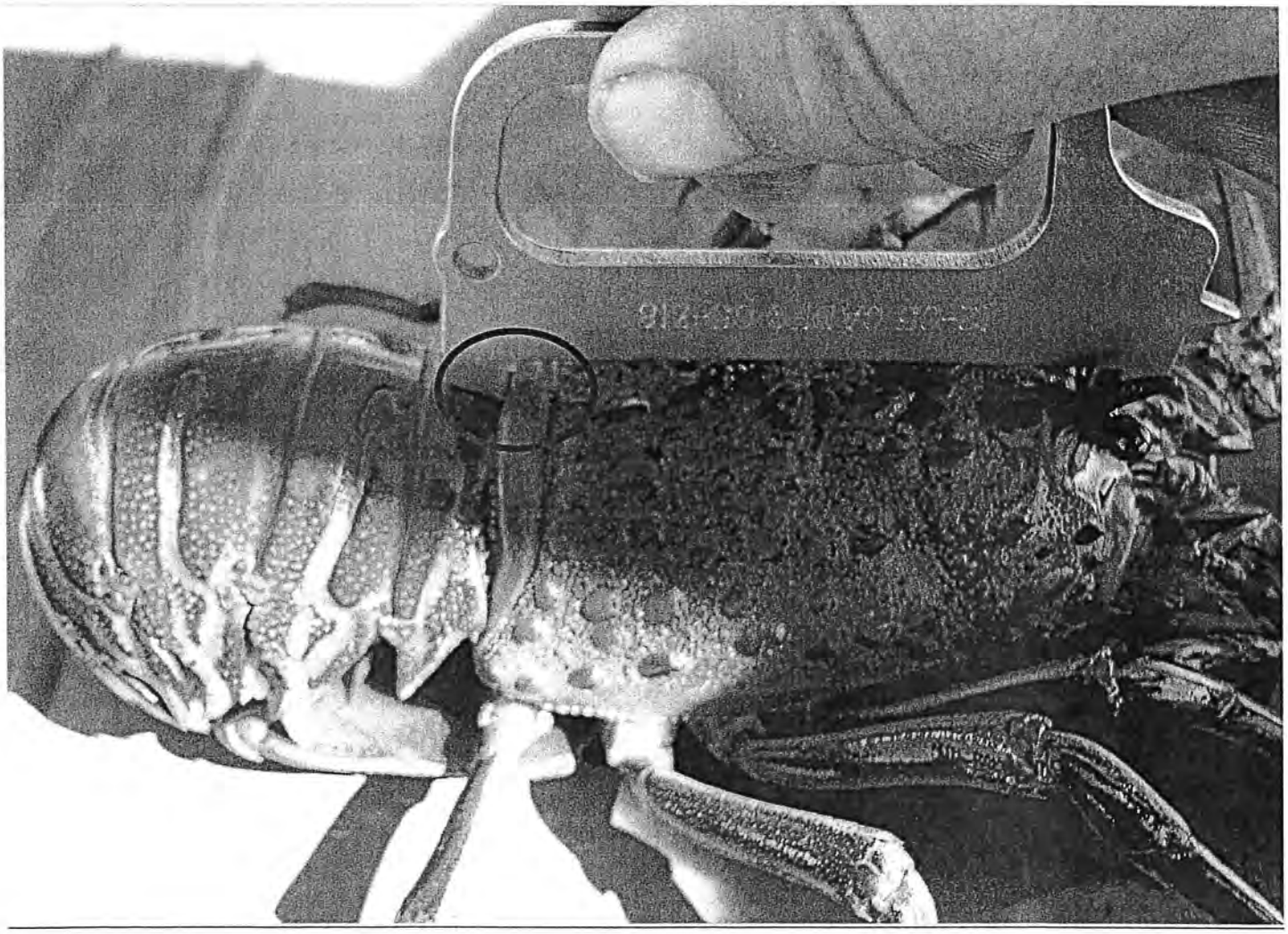
I contacted the vessel, identified myself as a Fish and Wildlife Warden and requested to conduct an inspection. Troy Tecklenburg was onboard and stated he was just fishing for halibut while he waited for his lobster traps to soak. Tecklenburg was in compliance with licensing and vessel registration. During the inspection of the lobster activity log, I noticed Tecklenburg had inaccurately filled in the wrong date for his fishing activity, Tecklenburg was later given a warning and asked to correct it. Pursuant to **C.C.R. T-14 190** the owner and operator of a commercial fishing vessel shall keep and submit a complete and accurate record of fishing activities. Using my department issued lobster measuring gauge, I checked the size of the five lobster Tecklenburg had onboard. Three of the five lobster in possession of Tecklenburg had a carapace less than 3 ¼ inches. Pursuant to **FGC 8252** no spiny lobster less than three and one quarter inches in length measured in a straight line from the rear of the edge of the eye socket to the rear edge of the body shell may be taken, possessed, purchased, or sold. Tecklenburg stated he had lost his lobster measuring gauge and had used a free CA Department of Fish and Wildlife measuring tape to measure the lobster. I explained to Tecklenburg that a measuring tape would not be precise enough to measure the lobster accurately. Tecklenburg protested and showed me how he measured the lobster with the measuring tape. I explained to Tecklenburg that because of the variability from holding the measuring tape he could not accurately measure the lobster. Tecklenburg, re-measured the lobster and photograph them.

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
A. Bagdasaryan # 820	02/20/2015	Wes Boyle	

I seized Tecklenburg's three undersized lobster and returned to the PV COHO, where I photographed and returned to the water the three undersized CA spiny lobster. I returned to the FV BLOODLINE and issued Tecklenburg a citation for the following violations:

FGC 8252 – Possession of three CA spiny lobster with a carapace less than 3 ¼ inches.

Evidence

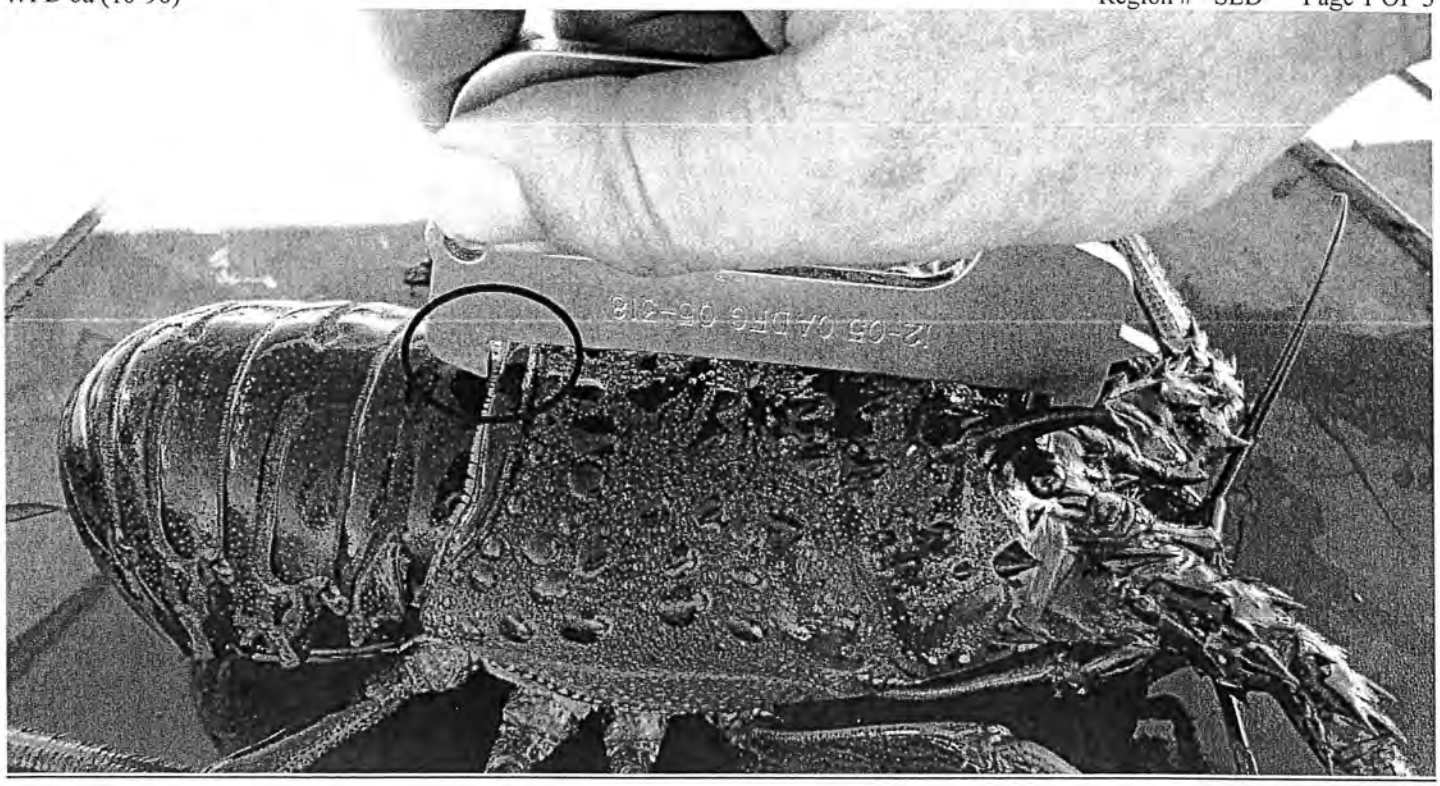


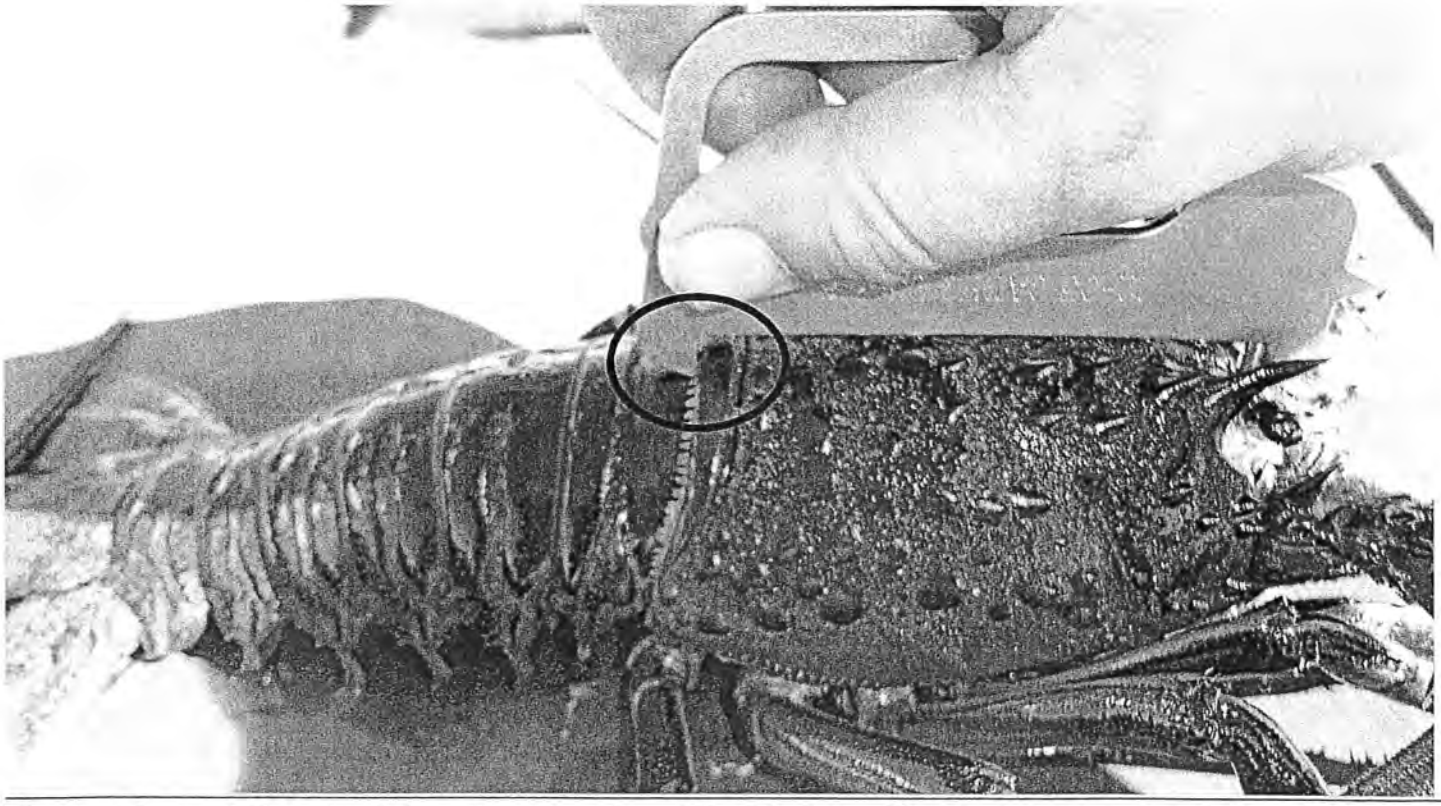
Preparer's Name and Badge Number	Date	Reviewer's Name	Date
A. Bagdasaryan # 820	02/20/2015	Wes Boyle	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

WPD 6a (10-98)





Three undersized CA spiny lobster in possession of Tecklenburg. The circled areas show the gap between the carapace of the lobster and the lobster measuring gauge.

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
A. Bagdasaryan # 820	02/20/2015	Wes Boyle	

Regulation information

Fish and Game Code, section 8252 states no spiny lobster less than three and one quarter inches in length measured in a straight line from the rear of the edge of the eye socket to the rear edge of the body shell may be taken, possessed, purchased, or sold.

California Code of Regulations, section 190 states the owner and operator of a commercial fishing vessel shall keep and submit a complete and accurate record of fishing activities.

Fish & Game Code, section 1006 gives Wardens inspection authority and states "The department may inspect the following:(a) All boats, markets, stores and other buildings, except dwellings, and all receptacles, except the clothing actually worn by a person at the time of inspection, where birds, mammals, fish, reptiles, or amphibia may be stored, placed, or held for sale or storage.

Fish & Game Code, section 86 says ""Take" means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

Fish & Game Code, section 45 states "Fish" means wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn, or ova thereof.

Fish and Game Code, section 7702 states the department may enter an examine any canning, packing, preserving, or reduction plant, or place of business where fish or other fishery products are packed, preserved, manufactured, bought, or sold, or board any fishing boat, barge, lighter, tender, or vehicle or receptacle containing fish.

Exhibit B

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

ENF 6a (4-04)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
03/25/2014	1700	Los Angeles/Los Angeles/Long Beach Superior

"X" ONE	"X" ONE	TYPE OF REPORT ("X" APPLICABLE)
☒ Arrest Report	☒ Self Initiated	☒ Commercial Fishing ☐ Hunting ☐ Inland Pollution ☐ CalTIP
☐ Formal Complaint	☐ Complaint	☐ Recreational Fishing ☐ Trapping ☐ Marine Pollution ☐ Other
		Other:

Suspect Information

Name Suspect #1 (First, Middle, Last)	Sex	Date of Birth (MM/DD/YY)	Citation Number
Troy Leith Tecklenburg	☒ M ☐ F	[redacted]	AD2008618

Suspect Address (Street, Apt, City, State, Zip Code)	Home Phone
[redacted]	[redacted]
Business Address (Street, Apt., City, State, Zip Code)	**Business Phone**
N/A	N/A

Identification Type ("X" APPLICABLE)	Suspect Description ("X" APPLICABLE)
☒ CDL/CID ☐ Other State DL/ID	General: Hair: Eyes: Ethnicity:
☐ Other ID:	Height: [redacted]
Number: [redacted]	Weight: [redacted]

Vehicle Type ("X" APPLICABLE)	Description (Make, Model, Year, Color)	License Plate Number/VIN
☐ Auto ☒ Vessel ☐ Other	Seaway, 1985, White/Blue	CF 0864 HP

Offenses and Charges

☒ F&G ☐ T-14 ☐ Other: Section: 2002 Description: to wit FGC 7145(a): Unlawful possession	☐ F&G ☐ T-14 ☐ Other: Section: Description:
☐ F&G ☐ T-14 ☐ Other: Section: Description:	☐ F&G ☐ T-14 ☐ Other: Section: Description:
☐ F&G ☐ T-14 ☐ Other: Section: Description:	☐ F&G ☐ T-14 ☐ Other: Section: Description:

Evidence Seized

Evidence Description (Amount, Type, Serial Number, etc.) "X" ONE ☐ Held ☐ Returned ☐ Destroyed ☒ Other 1 California Halibut return to the wild (ocean)	Evidence Photographed? ☒ Yes ☐ No
Evidence Description (Amount, Type, Serial Number, etc.) "X"ONE ☐ Held ☐ Returned ☐ Destroyed ☐ Other	Evidence Photographed? ☐ Yes ☐ No
Evidence Description (Amount, Type, Serial Number, etc.) "X"ONE ☐ Held ☐ Returned ☐ Destroyed ☐ Other	Evidence Photographed? ☐ Yes ☐ No

Case Synopsis

Subject was caught taking a California Halibut without a sport fishing license.

See ENF 6b For Additional Suspect and Witness Information "x"ONE ☐ Yes ☒ No

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden Oratovsky 783	03/27/2014	Lt. Rod Buckler	04/01/2014

PROSECUTING AGENCY — (WHITE) REGION — (GOLDEN ROD) ADMINISTRATIVE USE — (GREEN) OFFICER — (BLUE)

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

ENF 6a p.2 (Rev 4-04) Region# 5

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
03/25/2014	1700	Los Angeles/Los Angeles/Long Beach Superior

*X*APPLICABLE
☒ Narrative ☒ Arrest Report
☐ Supplemental ☐ Formal Complaint

TYPE OF REPORT (*X*APPLICABLE)
☐ Commercial Fishing ☐ Hunting ☐ Inland Pollution ☐ Incident Report
☒ Recreational Fishing ☐ Trapping ☐ Marine Pollution ☐ Other
Other:

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
Fish Harbor/Troy Leith Tecklenburg	Warden Oratovsky	AD2008618

On 03/25/2014 at approximately 1700 hours I was on uniformed patrol in Fish Harbor/Terminal Island in the City of Los Angeles. During this time I drove up to a dock that was located on the north east side of the harbor. I observed two boats at the dock, one of which had multiple fishing rods on board the boat. I observed one subject that was standing on the dock and another subject, later identified as Troy Leith Tecklenburg , who was on that boat with the fishing rods.

I identified myself as a Warden with the California Department of Fish and Wildlife and asked if he had any fish on board the boat. Tecklenburg said that he just had mackerel aboard the boat. Tecklenburg holds a California commercial fishing license [redacted] through the Department of Fish and Wildlife and is a commercial lobster fisherman. I know this because I have had prior contact with Tecklenburg. His boat is also commercially registered with the California Department of Fish and Wildlife as a commercial fishing vessel ([redacted]).

While talking to Tecklenburg I observed a closed white cooler that was on the dock near Tecklenburg's boat. Upon opening the cooler per Fish and Game Code 1006 I observed a legal sized California halibut. When I asked Tecklenburg about the halibut that was in the cooler, he said that he had caught the halibut approximately 3 days ago in the harbor and forgot about it. Although I noted a foul odor emanating from the cooler, the halibut was physically still in pretty good condition.

When I asked Tecklenburg if he caught the halibut under a sport or commercial fishing license, he said he caught it under a sport fishing license. When I asked to see Tecklenburg's sport fishing license, he said that he had one, just not on him.

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden Oratovsky 783	03/27/2014	Lt. Rod Buckler	04/01/2014

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

WPD 6a p.2 (Rev 10-98)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
03/25/2014	1700	Los Angeles/Los Angeles/Long Beach Superior

"X" APPLICABLE
- [x] Narrative
- [x] Arrest Report
- [ ] Supplemental
- [ ] Formal Complaint

TYPE OF REPORT ("X" APPLICABLE)
- [ ] Commercial Fishing
- [ ] Hunting
- [ ] Inland Pollution
- [ ] Incident Report
- [x] Recreational Fishing
- [ ] Trapping
- [ ] Marine Pollution
- [ ] Other:

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
Fish Harbor/Troy Leith Tecklenburg	Warden Oratovsky	AD2008618

I contacted the Automated License Data System (ALDS) telephonically and asked them to confirm whether Tecklenburg had a valid 2014 California sport fishing license. I was told that the last California sport fishing license Tecklenburg had purchased was for the 2013 calender year and that there was no record of Tecklenburg purchasing a 2014 California Sport Fishing License.

When I told Tecklenburg that he did not have a 2014 California sport fishing license, he said that his mom usually buys his fishing licenses and that she must have forgotten to buy the 2014 sport fishing license.

I informed Tecklenburg that he caught the halibut unlawfully as he did not have a valid 2014 sport fishing license. I cited Tecklenburg for violation of Fish and Game Code 2002 to wit 7145(a).

I seized, photographed and released the dead halibut back into the ocean.

Fish and Game Code 2002: It is unlawful to possess any bird, mammal, fish, reptile, or amphibian, or parts thereof, taken in violation of any of the provisions of this code, or of any regulation made under it.

Fish and Game Code 7145(a): 7145. (a) Except as otherwise provided in this article, every person 16 years of age or older who takes any fish, reptile, or amphibian for any purpose other than profit shall first obtain a valid license for that purpose and shall have that license on his or her person or in his or her immediate possession or where otherwise specifically required by law or regulation to be kept when engaged in carrying out any activity authorized by the license.

Additionally, Tecklenburg has been cited for other Fish and Game violations on three other occasions. Please see attached reports for more information.

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden Oratovsky 783	03/27/2014	Lt. Rod Buckler	04/01/2014

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

WPD 6a p.2 (Rev 10-98)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
03/25/2014	1700	Los Angeles/Los Angeles/Long Beach Superior

"X" APPLICABLE
- [x] Narrative
- [x] Arrest Report
- [ ] Supplemental
- [ ] Formal Complaint

TYPE OF REPORT ("X" APPLICABLE)
- [ ] Commercial Fishing
- [ ] Hunting
- [ ] Inland Pollution
- [ ] Incident Report
- [x] Recreational Fishing
- [ ] Trapping
- [ ] Marine Pollution
- [ ]

Other:

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
Fish Harbor/Troy Leith Tecklenburg	Warden Oratovsky	AD2008618

63. Applicable sections:
64.
65. Fish and Game Code 1006. The department may inspect the following: (a) All
66. boats, markets, stores and other buildings, except dwellings, and all receptacles,
67. except the clothing actually worn by a person at the time of inspection, where birds,
68. mammals, fish, reptiles, or amphibia may be stored, placed, or held for sale or
69. storage.
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Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden Oratovsky 783	03/27/2014	Lt. Rod Buckler	04/01/2014

PROSECUTING AGENCY --- (WHITE) REGION --- (GOLDENROD) ADMINISTRATIVE USE --- (GREEN) OFFICER --- (BLUE)

SUPERIOR COURT OF CALIFORNIA

COUNTY OF LOS ANGELES

FOR MISDEMEANOR or FELONY CITATION CALL

CRIMINAL AT (562) 256-2314

PROOF OF APPEARANCE

I CERTIFY THAT PERSON NAMED BELOW APPEARED IN THE COURT AS INDICATED:		
NAME OF PERSON WHO APPEARED IN COURT (PRINT) Troy Leith Teckenburg	CASE/CITATION NUMBER 2008618	☒ NO FILING TO DATE
APPEARED AS: (Capacity) ☐ Defendant ☐ Witness ☒ Other: Officer **TRAFFIC ONLY**	PLACE OF APPEARANCE ☐ COURTROOM: DIV/ DEPT _____ ☒ CLERK'S OFFICE	
DATE: 3-25-15 TIME: 12:30 ☐ A.M. ☒ P.M. COMMENTS: Call once a week for one year from the Violation date to see if the citation is entered. (562) 256-2313 between the hours of 8:30a.m. to 10:30 a.m. or 1:30p.m. to 3:30 p.m. You may also try calling the 24 hour Automated line at (213) 742-8809 (www.lacourt.org)	SUPERIOR COURT OF CALIFORNIA, COUNTY OF LOS ANGELES Sherri R. Carter, Executive Officer / Clerk By _____ Deputy	

Exhibit C

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

WPD 6a (10-98)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL
03-14-2014	1330	San Clemente Island, LAX

"X" ONE	"X" ONE	TYPE OF REPORT ("X" *APPLICABLE*)
[X] Arrest Report [ ] Formal Complaint	[X] Self Initiated [ ] Complaint	[X] Commercial Fishing [ ] Hunting [ ] Inland Pollution [ ] CalTIP [ ] Recreational Fishing [ ] Trapping [ ] Marine Pollution [ ] Other

Suspect Information

Name Suspect #1 (*First, Middle, Last*)	Sex	Date of Birth (*MM/DD/YY*)	Citation Number
Troy Leith Tecklenburg	[X] M [ ] F	[redacted]	**AD 2008413**

Suspect Address (*Street, Apt., City, State, Zip Code*)	Home Phone
[redacted]	[redacted]

Business Address (*Street, Apt., City, State, Zip Code*)	Business Phone
N/A	--

Identification Type	Suspect Description ("X" *APPLICABLE*)
("X"*APPLICABLE*) [X] CDL/CID [ ]Other State DL/ID [] Other ID: Number: [redacted]	GENERAL: HAIR: EYES: ETHNICITY: [redacted]

Vehicle Type ("X" *APPLICABLE*)	Description (*Make, Model, Year, Color*)	License Plate Number/VIN
[]Auto [X]Vessel [ ]Other	28', 1983, Grey	[redacted]

Name Suspect #2 (*First, Middle, Last*)	Sex	Date of Birth (*MM/DD/YY*)	Citation Number
Kenneth Parks	[X] M [ ] F	[redacted]	**AD2007785**

Suspect Address (*Street, Apt., City, State, Zip Code*)	Home Phone
[redacted]	

Business Address (*Street, Apt., City, State, Zip Code*)	Business Phone
N/A	--

Identification Type	Suspect Description ("X" *APPLICABLE*)
("X"*APPLICABLE*) [X] CDL/CID [ ]Other State DL/ID [] Other ID: Number: [redacted]	GENERAL: HAIR: EYES: ETHNICITY: [redacted]

Vehicle Type ("X" *APPLICABLE*)	Description (*Make, Model, Year, Color*)	License Plate Number/VIN
[]Auto [X]Vessel [ ]Other	28', 1983, Grey	[redacted]

Offenses and Charges

[X]F&G [X]T-14 [ ]Other: Section: 8252 Description: Commercial possession of short lobsters (18 counts)	[ ]F&G [X]T-14 [ ]Other: [ ]Section: 190 Description: No commercial record kept for catch
[X]F&G [ ]T-14 []Other: Section: 7850 Description: Guest on commercial boat shall record his presence on commercial boat log.	[X]F&G [ ]T-14 [ ]Other: [ ]Section: 7856(f) Description: Sport fishing while on a commercial fishing trip.

Evidence Seized

Evidence Description (*Amount, Type, Serial Number, etc.*) " X" ONE [X]Held []Returned [ ]Destroyed [x]Other 18 undersized lobsters, frozen and held as evidence.	Evidence Photographed? [ ]Yes [ ]No
Evidence Description (*Amount, Type, Serial Number, etc.*) "X" ONE [ ]Held [ ]Returned [ ]Destroyed [ ]Other N/A	Evidence Photographed? [ ]Yes [ ]No
Evidence Description (*Amount, Type, Serial Number, etc.*) "X" ONE [ ]Held [ ]Returned [ ]Destroyed [ ]Other N/A	Evidence Photographed? [ ]Yes [ ]No

Case Synopsis

On 03-14-2014, at approximately 1330 hours, Warden Matias and I were conducting a skiff patrol offshore San Clemente Island. From a distance

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
J. Holemo #769	03-31-2014	Lt. E. Kord #464	03-31-2014

we observed a grey commercial fishing vessel. We approach the vessel and made contact with the boat's owner, Troy Tecklenburg. Mr. Tecklenburg told us he was on a commercial trip and he was pulling lobster traps. Warden Matias boarded the vessel to conduct an inspection. During the inspection he discovered 18 undersized lobsters inside the live well of the boat. Mr. Tecklenburg provided me with a his log, which was blank. He told me the lobsters on board his boat were taken from a previous trip. When I asked if he had recorded the catch, he said he had not.

Warden Matias contacted one of the passengers on the boat who was rod and reel fishing. The passenger, identified as Kenneth Parks, stated he was sport fishing and was in possession of a sheep head fish.

I issued Mr. Tecklenburg a citation per Fish and Game Code section 8252, commercial possession of undersized lobster, and California Code of Regulations, section 190, no records kept of commercially caught lobster.

See WPD 6b For Additional Suspect and Witness Information "X" ONE [ ]Yes [x]NO

BACKGROUND

Fish & Game Code, section 1006 gives Wardens inspection authority and states "The department may inspect the following:(a) All boats, markets, stores and other buildings, except dwellings, and all receptacles, except the clothing actually worn by a person at the time of inspection, where birds, mammals, fish, reptiles, or amphibia may be stored, placed, or held for sale or storage.

Fish & Game Code, section 86 says ""Take" means hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

Fish & Game Code, section 45 states "Fish" means wild fish, mollusks, crustaceans, invertebrates, or amphibians, including any part, spawn, or ova thereof.

Fish and Game Code, section 2012 states all licenses, tags, and the birds, mammals, fish, reptiles, or amphibians taken or otherwise dealt with under this code, and any device or apparatus designed to be, and capable of being, used to take birds, mammals, fish, retiles, or amphibians shall be exhibited upon upon demand to any person authorized by the department to enforce this code or any law relating to the protection and conservation of birds, mammals, fish, reptiles, or amphibians.

Fish and Game Code, section 7702 states the department may enter an examine any canning, packing, preserving, or reduction plant, or place of business where fish or other fishery products are packed, preserved, manufactured, bought, or sold, or board any fishing boat, barge, lighter, tender, or vehicle or receptacle containing fish.

Fish and Game Code, section 8252 states no spiny lobster less than three and one quarter inches in length measured in a straight line from the rear of the edge of the eye socket to the rear edge of the body shell may be taken, possessed, purchased, or sold.

California Code of Regulations, section 190 states the owner and operator of a commercial fishing vessel shall keep and submit a complete and accurate record of fishing activities.

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
J. Holemo #769	03-31-2014	Lt. E. Kord #464	03-31-2014

Fish and Game Code, section 7856(f) states no person shall take or possess any fish on a commercial fishing vessel under a sport fishing license while that vessel is engaged in a commercial fishing activity, including going to or from an area where fish are taken for commercial purposes.

Fish and Game Code, section 7850(b) states any person not required to hold a commercial fishing license (an observer) shall register his or her presence on board the commercial vessel in a log maintained by the owner of operator of the vessel in accordance to the requirements of the department.

On 05-17-2013, at approximately 1200 hours, Warden L. Arkinstall #819 issued Mr. Tecklenburg a citation per CCR T-14, section 28.30(a), possession of a sand bass less than 14 inches.

On 03-25-2014, at approximately 1700 hours, Warden A. Oratovsky #783 issued Mr. Tecklenburg a citation per Fish and Game Code (FGC), section 2002, unlawful possession of a halibut to wit FGC, section 7145(a), fishing without a sport fishing license in possession.

INVESTIGATION

On 03-14-2014, at approximately 1330 hours, Warden Ben Matias and I were conducting a skiff patrol offshore San Clemente Island. We were patrolling with the intention of locating and inspecting commercial fishing vessels. From a distance we observed a grey vessel that fit the profile of a commercial fishing vessel, later identified as the High Life. We quickly approached the vessel and made contact with the crew. The owner of the boat, Troy Tecklenburg, appeared to be working on the mechanics of the boat and seemed surprised to see us. We identified ourselves as Fish and Wildlife officers and told him we would be conducting an inspection of his boat. I immediately noticed the presence of several fishing rods on the boat. I asked Mr. Tecklenburg if he was on a commercial or sport fishing trip and he told me he was commercially fishing for lobsters. There were two other men on board the vessel including Kenneth Parks. When I asked if Mr. Parks had a commercial fishing license, both he and Mr. Tecklenburg stated he was an observer and was not participating in commercial fishing.

Warden Matias boarded the boat and asked Mr. Tecklenburg if there were any lobsters or fish on the vessel. He said he was only able to pull one of his traps before his trap pulling mechanism failed. He said he had several lobsters inside his live well from a previous commercial trip. I asked him why he was in possession of lobsters from a previous trip and he stated he was having problems with his buyer and was concerned the lobsters may get stolen if he left them at his home port. Warden Matias began an inspection of the lobsters in the live well to ensure they were all of legal size. I asked Mr. Tecklenburg for his commercial log book. He gave me the book and admitted it was blank. I asked if he had any other log books on the vessel and he said the blank book was the only one he had. I then asked Mr. Tecklenburg if he had filled out any log entries for the lobster he took from the previous trip. He told me he did not.

I asked Mr. Parks if he had any luck while rod and reel fishing. He stated he was able to catch one fish, a sheep head. He told me the sheep head gave him a good enough fight that he thought it might have been a halibut. I asked him if he kept the fish and he replied that the fish was inside the live well. Warden Matias confirmed there was a sheep head inside the live well. Warden Matias completed his inspection and discovered 18 lobsters were undersized. We determined Mr. Tecklenburg was in violation of regulations due to possessing undersized lobster

and Mr. Parks was in violation of regulations due to sport fishing on board a vessel commercially fishing. Warden Matias took driver's licenses from both Mr. Tecklenburg and Mr. Parks. We used our skiff to return to the Patrol Boat Thresher, which was approximately 50 yards away.

Once on board the PB Thresher, Warden Matias used the radio to ask our dispatch center to run Mr. Parks information for any possible wants or warrants. Dispatched informed us Mr. Parks had to active warrants for his arrest, one for $250,000 and the other for $40,000. Warden Matias had the warrants confirmed and SURCOM dispatch contacted the Los Angeles Sheriff's office on Catalina Island. They said they would take custody of Mr. Parks if we arrested and transported him.

Warden Matias and I used the skiff to return to the High Life. I issued Mr. Tecklenburg a citation per Fish and Game Code, section 8252, possession of undersized lobsters (18 counts), and California Code of Regulations, section 190, failure to properly fill out and complete logs recording catch.

Warden Matias issued Mr. Parks a citation per Fish and Game Code, section 7857(f), sport fishing while on a commercial fishing trip, and Fish and Game Code, section 7850, not recorded in the log book as an observer. Warden Matias then informed Mr. Parks of the warrants for his arrest. Mr. Parks stated he did not know why there would be warrants for his arrest, but he would be cooperative. Warden Matias informed Mr. Parks that he was under arrest and conducted a brief search for weapons. We fitted Mr. Parks with a life vest and transferred him onto our skiff. We returned to the PB Thresher and brought Mr. Parks on board. Warden Matias proceeded to handcuff him per Fish and Wildlife policies and procedures and then continued to conduct a full search of Mr. Parks. I placed all of Mr. Parks personal effects, including $24 cash, inside a sealed plastic bag.

We transported Mr. Parks on board the PB Thresher per Fish and Wildlife policies and procedure, ensuring he was wearing a life vest and continuously supervised. At one point Mr. Parks complained the handcuffs were too tight. Warden Matias inspected the handcuffs and verified they were on per policy and procedure. Lt. Kord navigated the PB Thresher to Avalon, Catalina Island, where Harbor Patrol was waiting. Warden Matias and I transferred Mr. Parks onto the Harbor Patrol vessel and headed toward the Avalon docks. Once we arrived at the docks, we assisted Mr. Parks out of the vessel. LASO Deputy Deana Austin was at the docks and took custody of Mr. Parks and the plastic bag containing his personal effects. Mr. Parks was cooperative throughout the ordeal.

INVESTIGATION CONT.

Joshua David Fisher is a commercial lobster fisherman. I contacted Mr. Fisher and asked if he would be willing to testify in court in regards to how commercial fishermen measure lobster and explain how easy it is to tell if a lobster is undersize or not. I allowed him to measure the lobsters I had seized. Mr. Fisher stated the lobsters are obviously undersized and there would no excuse for a commercial fisherman to be in possession of them.

I did not tell Mr. Fisher who the subject of this case is. He can be reached at 714-231-2012 and his address is 413 N. Roosevelt Avenue, Fullerton, CA 92832.

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
J. Holemo #769	03-31-2014	Lt. E. Kord #464	03-31-2014

SUPERIOR COURT OF CALIFORNIA
COUNTY OF LOS ANGELES

NO. 4CN00035 PAGE NO. 1
THE PEOPLE OF THE STATE OF CALIFORNIA VS. CURRENT DATE 12/18/14
DEFENDANT 02: TROY TECKLENBURG
LAW ENFORCEMENT AGENCY EFFECTING ARREST: CAL DEPT OF FISH AND GAME

BAIL: APPEARANCE DATE	AMOUNT OF BAIL	DATE POSTED	RECEIPT OR BOND NO.	SURETY COMPANY	REGISTER NUMBER
10/17/14	$26,000.00	10/10/14	FCS501376438	FINAN CAS & SUR INC	L4283040

CASE FILED ON 05/30/14.
COMPLAINT FILED, DECLARED OR SWORN TO CHARGING DEFENDANT WITH HAVING COMMITTED, ON OR ABOUT 03/14/14 IN THE COUNTY OF LOS ANGELES, THE FOLLOWING OFFENSE(S) OF:
COUNT 02: 8252 F&G MISD
NEXT SCHEDULED EVENT:
06/20/14 830 AM ARRAIGNMENT DIST CATALINA COURTHOUSE DEPT 001

ON 06/20/14 AT 830 AM IN CATALINA COURTHOUSE DEPT 001

CASE CALLED FOR ARRAIGNMENT
PARTIES: ROY PAUL (JUDGE) CHERRY GAINES (CLERK)
LOISMARIE ABATE (REP) PATRICK OCROWLEY (DA)
DEFENDANT IS NOT PRESENT IN COURT, AND NOT REPRESENTED BY COUNSEL
DEFENDANT FAILED TO APPEAR FOR ARRAIGNMENT. BENCH WARRANT ORDERED ISSUED BAIL IN THE AMOUNT OF $26,000.00.
NEXT SCHEDULED EVENT:
BENCH/WARRANT TO ISSUE

06/20/14 BENCH WARRANT IN THE AMOUNT OF $26,000.00 BY ORDER OF JUDGE ROY PAUL ISSUED. (06/30/14).

ON 10/03/14 AT 1100 AM IN CATALINA COURTHOUSE DEPT 001

CASE CALLED FOR BENCH WARRANT HEARING
PARTIES: PETER J. MIRICH (JUDGE) CHERRY GAINES (CLERK)
LOISMARIE ABATE (REP) CAROL JANE NAJERA (DA)

DEFENDANT IS PRESENT IN COURT, AND REPRESENTED BY JOHN BUSSMAN PRIVATE COUNSEL
DEFENDANT ADVISED OF THE FOLLOWING RIGHTS ORALLY:
DEFENDANT ARRAIGNED AND ADVISED OF THE FOLLOWING RIGHTS AT MASS ADVISEMENT:
SPEEDY PUBLIC TRIAL, TRIAL WITHIN 30/45 DAYS, RIGHT TO REMAIN SILENT, SUBPOENA POWER OF COURT, CONFRONTATION AND CROSS EXAMINATION, JURY TRIAL, COURT TRIAL, RIGHT TO ATTORNEY, SELF-REPRESENTATION, REASONABLE BAIL, CITIZENSHIP, EFFECT OF PRIORS, PLEAS AVAILABLE, PROBATION.
THE COMPLAINT READ TO THE DEFENDANT.
A COPY OF THE COMPLAINT AND THE ARREST REPORT GIVEN TO DEFENDANTS COUNSEL.
DEFENDANT WAIVES ARRAIGNMENT, READING OF COMPLAINT, AND STATEMENT OF CONSTITUTIONAL AND STATUTORY RIGHTS.
DEFENDANT PLEADS NOT GUILTY TO COUNT 02, 8252 F&G.
COURT ORDERS AND FINDINGS:
-THE COURT ORDERS THE DEFENDANT TO APPEAR ON THE NEXT COURT DATE.
ENTRY BY: SKING

WHY SENTENCE SHOULD NOT BE PRONOUNCED. THE COURT ORDERED THE FOLLOWING
JUDGMENT:
AS TO COUNT (02):
IMPOSITION OF SENTENCE SUSPENDED
DEFENDANT PLACED ON SUMMARY PROBATION
FOR A PERIOD OF 012 MONTHS UNDER THE FOLLOWING TERMS AND CONDITIONS:
PAY A FINE OF $60.00
PLUS A STATE PENALTY FUND ASSESSMENT OF $174.00
PLUS $12.00 CRIMINAL FINE SURCHARGE (PURSUANT TO 1465.7 P.C.)
$40.00 COURT OPERATIONS ASSESSMENT (PURSUANT TO 1465.8(A)(1) P.C.)
$30.00 CRIMINAL CONVICTION ASSESSMENT (PURSUANT TO 70373 G.C.)
$10.00 CITATION PROCESSING FEE (PURSUANT TO 1463.07 P.C.)
$15.00 FISH & GAME PRESERVATION FUND (PURSUANT TO 12021F&G)
$30.00 INSTALLMENT & ACCOUNTS RECEIVABLE FEE (PURSUANT TO 1205(D)PC)
DEFENDANT TO PAY FINE TO THE COURT CLERK
DEFENDANT SHALL PAY A RESTITUTION FINE IN THE AMOUNT OF $150.00 TO THE COURT
TOTAL DUE: $521.00
IN ADDITION:

-DEFENDANT IS ORDERED TO PAY A PROBATION REVOCATION RESTITUTION
FINE PURSUANT TO PENAL CODE SECTION 1202.44, IN THE AMOUNT OF
$ 150.00 THIS FINE SHALL BECOME EFFECTIVE UPON THE REVOCATION
OF PROBATION.
-THE COURT ORDERS THE DEFENDANT TO APPEAR ON THE NEXT COURT DATE.
ANY MANDATORY AND NON-PUNITIVE FEES OR ASSESSMENTS ORDERED IN THIS CASE ARE NOT
CONDITIONS OF PROBATION
ENTRY BY:-SKING
COUNT (02): DISPOSITION: CONVICTED
DMV ABSTRACT NOT REQUIRED
NEXT SCHEDULED EVENT:
01/30/15 830 AM FINES/FEES DIST CATALINA COURTHOUSE DEPT 001
12/05/14 EXONERATED, # FCS501376438

CUSTODY STATUS: BAIL EXONERATED
CUSTODY STATUS: ON PROBATION

ON 12/10/14 AT 900 AM IN CATALINA COURTHOUSE DEPT 001

CASE CALLED FOR FINES/FEES

PARTIES: NONE (JUDGE) NONE (CLERK)
NONE (REP) NONE (DDA)
DEFENDANT IS PRESENT IN COURT, AND NOT REPRESENTED BY COUNSEL
DEFENDANT APPEARS IN PRO PER
PAYMENT IN THE AMOUNT OF $521.00 PAID ON 12/10/14 RECEIPT # LB455677011
NEXT SCHEDULED EVENT:
PROCEEDINGS TERMINATED

Exhibit D

California Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
http://www.wildlife.ca.gov
Law Enforcement Division
1416 9th Street, Room 1326
Sacramento, California 95814
(916) 653-4094

EDMUND G. BROWN, JR, Governor
CHARLTON H. BONHAM, Director

September 18, 2014

Mr. Troy Leith Tecklenburg

Seal Beach, CA

Dear Mr. Tecklenburg:

The Department of Fish and Wildlife has been notified that you failed to appear on a wildlife violation in the Los Angeles County Superior Court on June 20, 2014.

Pursuant to Fish and Game Code Section 12002(d)(1) (see attached) this letter serves as notice that your commercial lobster permit privileges are hereby suspended and will remain suspended until this Department receives notification that the court proceeding is completed and any fines are paid.

If you have any questions regarding this matter you may contact my office at the letterhead address or telephone number (916) 653-4094.

Sincerely,

For

Michael P. Carion, Chief
Law Enforcement Division

Attachments

Exhibit E

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

WPD 6a (10-98)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION
05/17/13	1200 hours	Los Angeles Harbor/Los Angeles/Long Beach Superior

"X" ONE	"X" ONE	TYPE OF REPORT ("X" *APPLICABLE*)
[X] Arrest Report [ ] Formal Complaint	[X] Self Initiated [ ] Complaint	[ ] Commercial Fishing [ ] Hunting [ ] Inland Pollution [ ] CalTIP [X] Recreational Fishing [ ] Trapping [ ] Marine Pollution [ ] Other

Suspect Information

Name Suspect #1 (*First, Middle, Last*)	Sex	Date of Birth (*MM/DD/YY*)	Citation Number
Troy Leith Tecklenburg	[X] M [ ] F	[redacted]	**AD2060903**

Suspect Address (*Street, Apt., City, State, Zip Code*)	Home Phone
[redacted]	[redacted]

Business Address (*Street, Apt., City, State, Zip Code*)	Business Phone
N/A	

Identification Type	Suspect Description ("*X*" *APPLICABLE*)
("X"*APPLICABLE)* [X] CDL/CID [ ]Other State DL/ID [ ] Other ID: Number [redacted]	GENERAL: HAIR: EYES: ETHNICITY: [redacted]

Vehicle Type (*"X"APPLICABLE*)	Description (*Make, Model, Year, Color*)	License Plate Number/VIN
[ ]Auto [X]Vessel [ ]Other	Seaway, 28', 1983, Blue	[redacted]

Offenses and Charges

[ ]F&G [X]T-14 [ ]Other: [ ]Section:28.30(a) Description: Barred sand bass less than 14 inches	[ ]F&G [ ]T-14 [ ]Other: [ ]Section: Description:
[ ]F&G [ ]T-14 [ ]Other: [ ]Section: Description:	[ ]F&G [ ]T-14 [ ]Other: [ ]Section: Description:
[ ]F&G [ ]T-14 [ ]Other: [ ]Section: Description:	[ ]F&G [ ]T-14 [ ]Other: [ ]Section: Description:

Evidence Seized

Evidence Description (*Amount, Type, Serial Number, etc.*) "X" ONE [ ]Held [X]Returned [ ]Destroyed [ ]Other Barred sand bass returned to water.	Evidence Photographed? [X]Yes [ ]No
Evidence Description (*Amount, Type, Serial Number, etc.*) "X" ONE [ ]Held [ ]Returned [ ]Destroyed [ ]Other	Evidence Photographed? [ ]Yes [ ]No
Evidence Description (*Amount, Type, Serial Number, etc.*) "X" ONE [ ]Held [ ]Returned [ ]Destroyed [ ]Other	Evidence Photographed? [ ]Yes [ ]No

Case Synopsis

At approximately 1200 hours on May 17, 2013, Warden Bagdasaryan and I were on skiff patrol when I saw an angler, later identified as Troy Leith Tecklenburg, on a blue vessel trolling in Los Angeles Harbor. Tecklenburg was in possession of a barred sand bass less than 14 inches.

See WPD 6b For Additional Suspect and Witness Information "X" ONE [ ]Yes [X]No

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
L.D. Arkinstall, #819	08/31/13	Lt. Hoffman	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

WPD 6a (10-98)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL JURISDICTION
05/17/13	1200 hrs	Los Angeles Harbor/Los Angeles/Long Beach Superior

"X" APPLICABLE		TYPE OF REPORT ("X" APPLICABLE)			
[X] Narrative	[X] Arrest Report	[ ] Commercial Fishing	[ ] Hunting	[ ] Inland Pollution	[ ] Incident Report
[ ] Supplemental	[ ] Formal Complaint	[X] Recreational Fishing	[ ] Trapping	[ ] Marine Pollution	[ ] Other

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
LA Harbor/Troy Leith Tecklenburg/CCR, T-14 28.30(a)-barred sand bass	L.D. Arkinstall, #819	AD2060903

At approximately 1200 hours on May 17, 2013, Warden Bagdasaryan and I were on skiff patrol when I saw an angler, later identified as Troy Leith Tecklenburg, on a blue vessel trolling in Los Angeles Harbor. We contacted Tecklenburg and identified ourselves as State Game Wardens.

I boarded Tecklenburg's vessel, and I asked him if he had any fish. Tecklenburg told me he had a few fish in his bait tank. I looked in the bait tank and saw two barred sand bass, a halibut, a scorpion fish and multiple bait fish. I asked Tecklenburg to take the barred sand bass and scorpion fish out to measure them. I measured the fish and saw one of the barred sand bass was under the legal size of 14 inches (Photo #1). **This is a violation of Code of California Regulations, Title 14 §28.30(a), barred sand bass must be a minimum of 14 inches.** Tecklenburg told me I had advised him of the size limit change a few weeks earlier when I had boarded his vessel at Fish Harbor. I cited Tecklenburg appropriately.

Attachments:

- **Regulations:**

CCR, T-14 § 28.30. Kelp Bass, Barred Sand Bass and Spotted Sand Bass.
(a) Minimum size: Fourteen inches total length or ten inches alternate length.

- **Photos:**

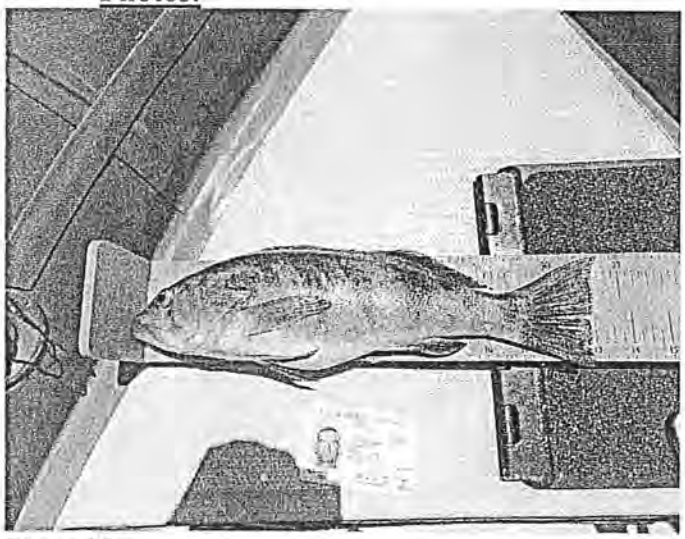

Photo #1

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
L.D. Arkinstall, #819	05/31/13	Lt. Hoffman	

CITATION NUMBER: 2060903 LEA:7204 DEPT FISH & GAME COURT: LONG BEACH
NAME: TECKLENBURG TROY LEITH
VIOL DATE 05/17/2013 VIOLATIONS 2830A/02

DATE	ACTION
06/21/2013	CITATION WITH A VIOLATION DATE OF 05/17/2013 IS FILED FOR TROY LEITH TECKLENBURG WITH THE FOLLOWING VIOLATIONS: 2830A/02. WITHOUT ADMITTING GUILT, VIOLATOR PROMISES TO APPEAR ON OR BEFORE 07/22/2013.
07/22/2013	ARRAIGNMENT HEARING IS SCHEDULED FOR 01/09/2014, THE AFTERNOON SESSION IN DEPARTMENT SO3. $0.00 PAID ON N/A - RECEIPT NUMBER. AR.
08/23/2013	HEARING TRANSFERRED TO NEW DEPARTMENT IN LONG BEACH.
01/15/2014	IH HOLD IS ISSUED ON 01/15/2014 PURSUANT TO 40509.5 V.C. BAIL IS SET AT $1223.00. DEPT 002.
01/15/2014	DMV ABSTRACT TRANSMITTED - FAILURE TO APPEAR ABSTRACT.
01/24/2014	DISPOSITION OF BAIL FORFEITED IS ENTERED ON 01/24/2014 FOR THE FOLLOWING VIOLATIONS: 40508A/29 2830A/02. BAIL IN THE AMOUNT OF $923.00 RECEIPT NUMBER 1140123T6325 IS FORFEITED. 202 B.
01/24/2014	DMV ABSTRACT TRANSMITTED - RELEASE ADJUDICATION ABSTRACT.

LOS ANGELES SUPERIOR COURT - GOVERNOR GEORGE DEUKMEJIAN COURTHOUSE Ref: AR076
275 MAGNOLIA AVE LONG BEACH, CA 90802

ARRAIGNMENT DOCKET

CASE NO. 2060903 LEA: 7204 ISSUE DATE: May 17, 2013

DEFENDANT: TROY LEITH TECKLENBURG TRUE NAME: _____

CHARGE(S):

1) 2830A	2)	3)	4)
$ 100.	$	$	$

Type of Bail: OR DMV Required: N Priors: 0 T/S Eligible: N Date Posted:

DATE: January 09, 2014 TIME: 1:30pm DEPT: S03

JUDGE/COMMISSIONER/JUDGE PRO TEM: Dennis Carrol CLERK: L. Harris

REPORTER _____ INTERPRETER _____ PROSECUTOR _____

DEFENDANT IN COURT WITHOUT _____ COUNSEL, GIVES TRUE NAME AS CHARGED

( ) INFRACTION: Defendant duly arraigned and informed of the charges against him. Defendant advised that he is entitled to a public trial, within 45 days; to the aid of the Court in producing witnesses in his behalf; to be confronted by and question the witnesses against him; to be admitted to reasonable bail, and to be represented by a lawyer of his own choosing.

( ) MISDEMEANOR: Complaint read and defendant advised that he is entitled to a public trial within 30/45 days; to the aid of the Court in producing witnesses in his behalf; to be confronted with the witnesses against him in the presence of the Court; to a trial by jury; to be admitted to reasonable bail; to be represented by a lawyer of his own choosing or to have counsel provided to him if financially unable to employ counsel.

[ ] PURSUANT TO P.C. 17d2: The Court, with the consent of the defendant, determines that the offense is an infraction in which event the case shall proceed as if the defendant has been arraigned on an infraction complaint.

( ) DEFENDANT EXPRESSLY WAIVES HIS RIGHT TO:
- ( ) Remain Silent
- ( ) Hire a lawyer
- ( ) Court Trial
- ( ) Witnesses, subpoena, confrontation
- ( ) Jury Trial

( ) ATTORNEYS JOIN

( ) DEFENDANT ADVISED OF THE ELEMENTS OF THE CHARGE(S)
- ( ) The maximum and minimum sentence, and other consequences of plea of guilty or nolo contendere
- ( ) Advised of vehicle forfeiture pursuant to 14607.6 V.C.

( ) AFTER INQUIRY BY THE COURT, THE COURT FINDS THAT:
- ( ) All waivers were knowingly, intelligently and understandingly made.
- ( ) The plea is freely and voluntarily made.
- ( ) There is a factual basis for the plea.
- ( ) Plea is accepted by the court.

ACCUSED PLEADS _____ BAIL $ _____

COUNT I $ _____ COUNT II $ _____
COUNT III $ _____ COUNT IV $ _____
COUNT V $ _____ COUNT VI $ _____

COUNT(S) _____ DISMISSED T/S

As part of your sentence, you are ordered to return to satisfy the following conditions:

( ) Fine payment of $ _____
Due on _____ ( ) AM ( ) PM
( ) Traffic School
( ) Fee due on _____
( ) Completion due on _____
( ) Community Service _____ hours
Due on _____ ( ) AM ( ) PM
( ) Post Bail of $ _____ on _____
Trial date _____ Dept _____
Time _____
( ) Other _____
( ) Release issued # _____
( ) Commitment issued
( ) Remand issued

( ) Bail Refund card issued # _____

DEFENDANT:
( ) Failed to appear
( ) Hold/Warrant to (re)issue
( ) Bench Warrant ordered. Bail $ _____
( ) Paid fine in full
( ) Partial payment $ _____. Balance due $ _____
( ) Requested continuance for fine payment.
Continued to _____
( ) Submitted C/S completion
( ) Submitted T/S completion
( ) Satisfied all conditions indicated above
Date: _____ Deputy Clerk _____

CIVIL ASSESSMENT
( ) Civil Assessments in the amount of $300 levied.
( ) Good Cause Shown: Civil Assessment Set Aside.

Created: 01/03/14

DEPARTMENT OF FISH AND GAME
NOTICE TO APPEAR FG-900

☐ MISDEMEANOR
☐ Traffic ☒ Non-traffic

AD2060903

Date of Violation	Time		Day of Week	Case No.
5/17/13	12:00	☐ AM ☒ PM	FRI	—

Name (First, Middle, Last) ☐ Owner's Responsibility (Veh. Code, § 40001)
TROY LEITH TECKLENBURG

Address [redacted]

City [redacted] State Zip Code Phone Number

Driver Lic. No.	State	Class	Commercial	Age	Birth Date
[redacted]			☐ Yes ☒ No	[redacted]	[redacted]

Sex	Hair	Eyes	Height	Weight	Race	Other Description
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

Veh. Lic. No. or VIN [redacted] State [redacted]

Yr. of Veh.	Make	Model	Body Style	Color
1983	SEAWAY	28'	V HULL	BLUE

☐ COMMERCIAL VEHICLE (Veh. Code, § 15210(b))
☐ HAZARDOUS MATERIAL (Veh. Code, § 353)

Evidence of Financial Responsibility

Registered Owner or Lessee ☐ Same as Driver

Address ☐ Same as Driver

City State ZIP Code

Correctable Violation (Veh. Code, § 40610) ☐ Booking Required

Yes	No	Code and Section	Description	Misdemeanor or Infraction (Circle)
☐	☐	CCR, T-14 28.30(a)	-SPOTTED	M (I)
☐	☐	SAND BASS LESS THAN		M I
☐	☐	14 INCHES		M I
☐	☐			M I

Speed Approx.	R.E./Max Sod.	Veh. Lim.	GPS Lat	Long

Location of Violation(s) at SAN PEDRO HARBOR City/County of Occurrence SAN PEDRO CA CalTIP: Yes / No

Evidence Seized 1 SPOTTED SAND BASS RTW

☐ Violations not committed in my presence, declared on information and belief.

I declare under penalty of perjury under the laws of the State of California the foregoing is true and correct.

L. ARKINSTALL — Arresting or Citing Officer
819 — Badge No.

/ / Date — Name of Arresting Officer, if different from Citing Officer — Badge No.

WITHOUT ADMITTING GUILT, I PROMISE TO APPEAR AT THE TIME AND PLACE INDICATED BELOW.
X Signature [signature]

WHEN: ON OR BEFORE THIS DATE: 7/22/13 Time: 8:30 ☒ AM ☐ PM
WHAT TO DO: FOLLOW THE INSTRUCTIONS ON THE REVERSE.
Name of Court LONG BEACH SUPERIOR
WHERE: Section or Division, Room No. 415 W. OCEAN BLVD.
Street Address LONG BEACH, CA 90502
Phone Number 562-491-6234 Ext — Court 194600

☐ Juvenile
☐ To be notified
☐ You may arrange with the clerk to appear at a night session of the court.

AD2060903

COURT COPY
SEE REVERSE TR-130

Judicial Council of California Form
Rev. 09-20-05 (Veh. Code, §§ 40500(b), 40513(b), 40522, 40600; Pen. Code, § 853.9)

ETRS CLOSED WORK FORM

CITATION / CASE DATA

Citation No.	2060903	FIRST NAME	TROY
LEA No.	7204	MID. INIT.	L
DOC TYPE	ETRS	LAST NAME	TECKLENBURG

AUDIT TAPE DATA

ENTRY DATE	01/23/14	AMOUNT DUE	$923.00
DISPO DATE		AMOUNT REC.	$923.00
RECEIPT NO.	1140123T6325	BAIL	$0.00

REASON FOR CLOSE: Bail Forfeiture - source: TIPS

Exhibit F

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

ARREST/INVESTIGATION REPORT

ENF 6a (4-04)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
03/27/2013	0730	San Clemente Island/Los Angeles/Avalon Superior

"X" ONE	"X" ONE	TYPE OF REPORT ("X" APPLICABLE)
☒ Arrest Report	☒ Self Initiated	☒ Commercial Fishing ☐ Hunting ☐ Inland Pollution ☐ CalTIP
☐ Formal Complaint	☐ Complaint	☐ Recreational Fishing ☐ Trapping ☐ Marine Pollution ☐ Other
		Other:

Suspect Information

Name Suspect #1 (First, Middle, Last)	Sex	Date of Birth (MM/DDIYY)	Citation Number
Troy Tecklenburg Leith	☒ M ☐ F	[redacted]	AD2061315

Suspect Address (Street, Apt, City, State, Zip Code)	Home Phone
[redacted]	[redacted]

Business Address (Street, Apt., City, State, Zip Code)	Business Phone
N/A	N/A

Identification Type ("X"APPLICABLE)	Suspect Description ("X"APPLICABLE)
☒ CDL/CID ☐ Other State DL/ID	General: Hair: Eyes: Ethnicity:
☐ Other ID:	Height: [redacted]
Number: [redacted]	Weight:

Vehicle Type ("X" APPLICABLE)	Description (Make, Model, Year, Color)	License Plate Number/VIN
☐ Auto ☒ Vessel ☐ Other	Seaway, 1985, White/Blue	[redacted]

Offenses and Charges

☒ F&G ☐ T-14 ☐ Other: Section: 8251 Description: Take of lobster out of season (commercial)	☐ F&G ☐ T-14 ☐ Other: Section: Description:
☒ F&G ☐ T-14 ☐ Other: Section: 9004 Description: Traps not checked within 96 hours (4 days)	☐ F&G ☐ T-14 ☐ Other: Section: Description:
☐ F&G ☒ T-14 ☐ Other: Section: 122 (n) Description: Traps left past 6 days after close of lobster season	☐ F&G ☐ T-14 ☐ Other: Section: Description:

Evidence Seized

Evidence Description (Amount, Type, Serial Number, etc.)	"X" ONE ☐ Held ☐ Returned ☐ Destroyed ☐ Other	Evidence Photographed? ☐ Yes ☐ No
Evidence Description (Amount, Type, Serial Number, etc.)	"X"ONE ☐ Held ☐ Returned ☐ Destroyed ☐ Other	Evidence Photographed? ☐ Yes ☐ No
Evidence Description (Amount, Type, Serial Number, etc.)	"X"ONE ☐ Held ☐ Returned ☐ Destroyed ☐ Other	Evidence Photographed? ☐ Yes ☐ No

Case Synopsis

Subject was caught fishing commercially for lobster out of season.

See ENF 6b For Additional Suspect and Witness Information "x"ONE ☐ Yes ☒ No

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden Oratovsky 783	03/31/2013	Lt. Rod Buckler	

PROSECUTING AGENCY — (WHITE) REGION --- (GOLDEN ROD) ADMINISTRATIVE USE --- (GREEN) OFFICER --- (BLUE)

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

ENF 6a p.2 (Rev 4-04)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
03/27/2013	0730	San Clemente Island/Los Angeles/Avalon Superior

*X*APPLICABLE
☒ Narrative ☒ Arrest Report
☐ Supplemental ☐ Formal Complaint

TYPE OF REPORT (*X*APPLICABLE)
☒ Commercial Fishing ☐ Hunting ☐ Inland Pollution ☐ Incident Report
☐ Recreational Fishing ☐ Trapping ☐ Marine Pollution ☐ Other
Other:

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
Offshore San Clemente Island/Troy Tecklenburg Leith	Warden Oratovsky	AD2061316

On 03/26/2013, I was on skiff patrol offshore San Clemente Island with Wardens Zurawski and Bagdasaryan when I observed several orange colored buoys in the water on the northern side of the island. Upon closer inspection, I saw a line attached to the buoys and a number ([redacted] engraved into the buoys. According to CCR T-14 122 (k): Each buoy identifying a lobster trap shall display the commercial fishing license identification number of the lobster operator permit holder followed by the letter P.

According to Fish and Game code 8251: Spiny lobsters may be taken only between the first Wednesday in October and the first Wednesday after the 15th of March (MARCH 20TH 2013). Lobster traps may be set and baited 24 hours in advance of the opening date of the lobster season if no other attempt is made to take or possess the lobsters. Additionally, According to CCR T-14 122 (n): During the closed season for the taking of spiny lobster, no buoy attached to any trap may be marked in such manner as to identify the trap as a lobster trap, except that legally marked lobster traps may be placed in the water not more than six (6) days before the opening of the season and may remain in the water for not more than six (6) days after the close of the season, if the door or doors to such traps are wired open, the trap is un-baited, the buoy remains at the surface of the ocean, and no attempt is made to take spiny lobsters.

As 03/26/2013 was the 6th and final day that lobster traps are legally allowed to still be in the water, I decided that I would wait until the next day, 03/27/2013 and see if the traps were still in the water. This would be in violation of CCR T-14 122(n).

On 03/27/2013, I was on skiff patrol with Warden Bagdasaryan offshore San Clemente Island around 0730 hours in the same area as I was in on 03/26/2013 (7 days after the close of lobster season).

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden Oratovsky 783	03/31/2013	Lt. Rod Buckler	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

WPD 6a p.2 (Rev 10-98)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
03/27/2013	0730	San Clemente Island/Los Angeles/Avalon Superior

"X" APPLICABLE: [X] Narrative [X] Arrest Report [ ] Supplemental [ ] Formal Complaint

TYPE OF REPORT ("X" APPLICABLE): [X] Commercial Fishing [ ] Hunting [ ] Inland Pollution [ ] Incident Report [ ] Recreational Fishing [ ] Trapping [ ] Marine Pollution [ ] Other:

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
Offshore San Clemente Island/Troy Tecklenburg Leith	Warden Oratovsky	AD2061316

I observed a white and blue colored commerically registered fishing vessel with the Department of Fish and Game ([redacted]) with the number ([redacted]) imprinted on the aft port side of the boat. Upon contact with the captain of the vessel, later identified as Troy Tecklenburg Leith I identified myself and Bagdasaryan as Wardens with the Department of Fish and Game and asked what Leith was doing. Leith responded that he was trying to retrieve his lobster traps. I asked Leith how many traps he had in the water. Leith responded about 50. I then asked Leith if the traps were opened and un-baited as per CCR T-14 122(n). Leith stated that all his traps were closed and that some of them still had bait. I asked Leith if he was aware that his traps were required to be out of the water by the 6th day after the close of lobster season. Leith said he thought he had two weeks. I then asked Leith when was the last time he checked his lobster traps. Leith stated that the last time he checked his traps was March 20th, 2013 (the last day of the lobster season). This is in violation of Fish and Game Code 9004: Every trap shall be raised, cleaned, serviced, and emptied at intervals, not to exceed 96 hours (4 days), weather conditions at sea permitting, and no trap shall be abandoned in the waters of this state.

I then observed Leith pull up two lobster traps, both of which contained lobsters (see attached pictures). Both traps were closed, one of which contained a bait canister (see attached pictures). I informed Leith that he was in violation of Fish and Game Code 8251: Take of lobster commercially out of season and would be cited for that violation. I also told Leith that he needed to take all his lobster traps out of the water and was not able to possess any lobster.

Additionally Leith was in violation of CCR T-14 122(n) and Fish and Game Code 9004. I am asking the District Attorney to file these additional charges against Leith

Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden Oratovsky 783	03/31/2013	Lt. Rod Buckler	

STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

NARRATIVE/SUPPLEMENTAL

WPD 6a p.2 (Rev 10-98)

DATE OF INCIDENT/OCCURRENCE	TIME (2400)	CITY/COUNTY/JUDICIAL DISTRICT
03/27/2013	0730	San Clemente Island/Los Angeles/Avalon Superior

"X" APPLICABLE
- [x] Narrative
- [x] Arrest Report
- [ ] Supplemental
- [ ] Formal Complaint

TYPE OF REPORT ("X" APPLICABLE)
- [x] Commercial Fishing
- [ ] Hunting
- [ ] Inland Pollution
- [ ] Incident Report
- [ ] Recreational Fishing
- [ ] Trapping
- [ ] Marine Pollution
- [ ] Other:

Location/Subject/Incident Name	Arresting/Case Officer	Citation Number
Offshore San Clemente Island/Troy Tecklenburg Leith	Warden Oratovsky	AD2061316

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Preparer's Name and Badge Number	Date	Reviewer's Name	Date
Warden Oratovsky 783	03/31/2013	Lt. Rod Buckler	

PROSECUTING AGENCY --- (WHITE) REGION --- (GOLDENROD) ADMINISTRATIVE USE --- (GREEN) OFFICER --- (BLUE)

SUPERIOR COURT OF CALIFORNIA

COUNTY OF LOS ANGELES

FOR MISDEMEANOR or FELONY CITATION CALL

CRIMINAL AT (562) 256-2314

PROOF OF APPEARANCE

I CERTIFY THAT PERSON NAMED BELOW APPEARED IN THE COURT AS INDICATED:	
NAME OF PERSON WHO APPEARED IN COURT (PRINT) Troy Leith Tecklenburg	CASE/CITATION NUMBER ☒ NO FILING TO DATE 2061315
APPEARED AS: (Capacity) ☐ Defendant ☐ Witness ☒ Other: officer **TRAFFIC ONLY**	PLACE OF APPEARANCE ☐ COURTROOM: DIV/ DEPT _____ ☒ CLERK'S OFFICE
DATE: 3-25-15 TIME: 12:30 ☐ A.M. ☒ P.M. COMMENTS: Call once a week for one year from the Violation date to see if the citation is entered. (562) 256-2313 between the hours of 8:30a.m. to 10:30 a.m. or 1:30p.m. to 3:30 p.m. You may also try calling the 24 hour Automated line at (213) 742-8809 (www.lacourt.org)	SUPERIOR COURT OF CALIFORNIA, COUNTY OF LOS ANGELES Sherri R. Carter, Executive Officer / Clerk By SL Deputy

BEFORE THE
FISH AND GAME COMMISSION
STATE OF CALIFORNIA

In the Matter of the Denial of the Application to Renew Restricted Species Permit Issued to: KELE YOUNG(ER), Appellant.	Case No. 14ALJ19-FGC OAH No. 2014110192

PROPOSED DECISION

This matter was assigned to Administrative Law Judge Coren D. Wong, Office of Administrative Hearings (OAH), State of California, acting as hearing officer for review and decision pursuant to California Code of Regulations, title 14, section 671.1, subdivision (c)(7)(A).

David Kiene, Senior Staff Counsel, represented the Department of Fish and Wildlife (Department), State of California.

Appellant Kele Young(er) represented herself.

This matter was decided based solely on the parties' written submissions. The record was closed, and the matter was submitted for decision on January 20, 2015.

SUMMARY

Appellant applied for renewal of her 2013 Restricted Species Shelter Permit, which allowed her to keep one Leopard, one Mountain Lion, two Indochinese Leopards and two Siberian Tigers for humane purposes. She completed her renewal application incorrectly and did not submit the required application, species permit, or inspection fees, claiming to be exempt from such fees. The Department treated appellant's claim of exemption as a request for a waiver of the application and permit fees, and approved the request. However, the inspection fee is not waiveable, and the Department informed appellant of that and provided her with another opportunity to submit a completed application and the necessary fee. Appellant refused to submit a completed application or pay the inspection fee, and the Department denied her application. Appellant appealed the Department's denial of her application and request for a waiver of the inspection fee. For the reasons discussed below, her appeal should be denied.

FACTUAL FINDINGS

Procedural Issues

1. Appellant objected to the Fish and Game Commission's authority to refer her appeal to an Administrative Law Judge with OAH for resolution. She also objected to the Fish and Game Commission's authority to have her appeal decided based solely on the parties' written submissions. As discussed in Legal Conclusion 1, both of appellant's arguments are without merit.

2. Appellant also objected to and moved to strike Respondent's Response to Appellant's Written Statement on the grounds that it was untimely, filed in bad faith after the Department notified appellant and OAH that it would not file a response, and filed directly with OAH rather than the Fish and Game Commission. Appellant's objections are overruled and her motion is denied for the reasons explained below.

3. The Department served appellant notice that it was denying her Application on September 19, 2014. Appellant filed her Notice of Appeal on October 15, 2014. Therefore, her written statement in support of her appeal was due no later than November 14, 2014. (Cal. Code Regs., tit. 14, § 671.1, subd. (c)(7)(B) [appellant's written statement in support of appeal is due no later than 30 days after filing an appeal request].)

But the Department stipulated to extending the deadline for appellant to submit her written statement through and including December 5, 2014, and OAH issued an order setting a briefing schedule incorporating that stipulation. (Cal. Code Regs., tit. 14, § 671.1, subd. (c)(7)(B) [the parties may stipulate to extending the deadline for appellant's written statement by 30 days].) Appellant's Opening Brief was timely submitted on December 5, 2014,[1] and Respondent's Response to Appellant's Written Statement was timely submitted on January 5, 2015.[2]

4. Appellant argues in her motion to strike that she "never requested an extension of time to submit a Written Statement, nor did she ever need or stipulate to an extension of time to submit a Written Statement." To the extent appellant is now disclaiming the benefits of the Department's stipulation and therefore denying the benefit of the extended deadlines specified in OAH's briefing schedule, Appellant's Opening Brief was untimely since it was due by November 14, 2014 – the 30th day after the date on which she submitted her request

---

[1] Appellant's argument that Exhibit B to her motion to strike supports her contention that she timely submitted her written statement on November 13, 2014, is belied by the e-mail in that exhibit. First, her e-mail is dated November 25, 2014. Second, the e-mail states: "Attached please find Appellant's Request for Judicial Notice. A hard copy is being served today with proof of service." The e-mail says nothing about Appellant's Opening Brief.

[2] Contrary to appellant's argument, the Department never received an extension of time to submit its response as explained in Factual Finding 5.

for appeal. And since she has the burden on appeal, her failure to timely submit a written statement results in the denial of her appeal. (Cal. Code Regs., tit. 14, § 671.1, subd. (c)(7)(B) ["[A] person requesting an appeal (appellant) shall submit a written statement to the commission that specifically identifies the legal and factual grounds for challenging the department's action."]) But the Department's written response was timely under both the statutory deadline – 30 days from receipt of appellant's written statement[3] – or that which was specified in OAH's briefing schedule – January 5, 2015. (See, Cal. Code Regs., tit. 14, § 671.1, subd. (c)(7)(C) [the Department's response is due no later than 30 days after its receipt of appellant's written statement].)

5. Contrary to appellant's argument, the Department never made the representation that it was not going to respond to Appellant's Opening Brief. Instead, the Department responded to OAH's request for a response to appellant's Notice of Objection to "Order?" Denying Disqualification by stating that "the Department will not be responding to that filing."

6. Appellant is technically correct that all documents on appeal are supposed to be submitted to the Fish and Game Commission, who in turn is supposed to forward copies to OAH, rather than directly to the latter entity. (Cal. Code Regs., tit. 14, §671.7, subd. (c)(7)(C).) But such a trivial departure from the proper procedure is meaningless. (See, *In re Martinez* (2012) 210 Cal.App.4th 800, 827 [the law generally does not require idle acts when doing so would exalt form over substance].)

Evidentiary Matters

Written submissions

7. This matter was decided based solely on the following exhibits, except as discussed in Factual Findings 11, 15, and 16 below:

1. Notice of Appeal;

2. September 19, 2014 Notice of Denial of Your 2013 Renewal Application for a Restricted Species Shelter Permit and Proof of Service;

3. July 14, 2014 Notice of Incomplete 2013 Renewal Application for a Restricted Species Shelter Permit;

4. July 7, 2014 Memorandum from David Elms, Regional Manager of the Inland Desert Region;

[3] The 30th day fell on Sunday, January 4, 2015. Therefore, the statutory deadline rolled to Monday, January 5, 2015. (Code Civ. Proc., § 12a, subd. (a).)

5. November 4, 2014 correspondence from Sonke Mastrup, Executive Director;

6. November 7, 2014 e-mail correspondence from David Kiene, Senior Staff Counsel;

7. Order Setting Briefing Schedule;

8. Notice of Non-Waiver of Objections;

9. Appellant's Opening Brief;

10. Appellant's Opening Brief and Proof of Service, with the following attached exhibits:

    A. August 2, 2012 and August 29, 2012 correspondence from Tom Adams, Notice of Decision Not to Proceed, April 27, 2012 correspondence from Jon D. Snellstrom, Associate Governmental Program Analyst;

    B. September 19, 2012 and May 8 and 10, 2013 correspondence from appellant;

    A. August 2, 2012 and August 29, 2012 correspondence from Tom Adams, Notice of Decision Not to Proceed, April 27, 2012 correspondence from Jon D. Snellstrom, Associate Governmental Program Analyst;[4]

    B. September 19, 2012 correspondence from appellant;

    C. May 8, 2013 correspondence from appellant;

    C. E-mail correspondence from David Kiene, Senior Staff Counsel;

    D. Notice of Changes and New Requirements to Section 671, Title 14, of the California Code of Regulations Re: Inspections, Facility Maps and Records of Restricted Species;

    E. Response to Respondent's Written Statement;

    F. [Blank]

---

[4] The exhibits are listed exactly as they are attached to Appellant's Opening Brief, including duplicates.

G. October 30, 2013 e-mail from correspondence cheetatheachimp@cs.com and August 6, 2013 e-mail correspondence from appellant;

H. Civil Case Information – All Minute Orders;

I. Fish and Game Code Section 202, 220, 2050 - 2055;

J. Proof of Service for Notice of Denial – Restricted Species Permit Renewal Application;

K. Federal Rules of Civil Procedure Rule 15;

11. Appellant's Request for Judicial Notice, requesting judicial notice of the following matters:

A. Fish and Game Code sections 200; 220, subdivision (b); 240, subdivision (a)(1), (2); 1002; 1002, subdivision (c); 2116; 2118.5; and 2150, subdivision (b);

B. California Code of Regulations, title 14, sections 671.1, subdivision (b)(3), (10); and 671.8, subdivision (a);

C. Government Code sections 11340.6; and 11340.7, subdivisions (a) and (b);

D. Civil Code sections 1619 through 1623;

E. DVD recording of the May 22, 2013 Fish and Game Commission meeting;

F. Federal Rules of Civil Procedure, Rule 15;

G. Court order in *Exotic Feline Breeding Compound Inc. v. California Department of Fish and Wildlife*;

H. Fish and Game Code sections 2050 through 2055

12. Declaration of Thomas Adams, with the following attachments:

A. August 29, 2012 correspondence;

B. August 2, 2012 correspondence;

C. Notice of Decision Not to Proceed;

D. April 27, 2012 correspondence from Jon D. Snellstrom

13. Declaration of Thomas Adams, with the following attachments:

    A. August 2, 2012 correspondence;

    B. Notice of Decision Not to Proceed;

    C. April 27, 2012 correspondence from Jon D. Snellstrom

14. Appellant's Response to the California Fish and Game Commission's November 4, 2014 Notice of Receipt of Appeal and Other Statements Made Therein;

15. Affidavit of Prejudice;

16. DVD of the August 8, 2012 and May 22, 2013 Fish and Game Commission meetings;

17. Proof of Service;

18. November 14, 2014 correspondence from David Kiene, Senior Staff Counsel;

19. Order Deferring Ruling on Appellant's Objections to Jurisdiction and Venue:

20. Notice of Objection to "Order ?" to Defer Disqualification ?;

21. Order Denying Appellant's Challenge for Cause and Peremptory Challenge of the Office of Administrative Hearings and Proof of Service;

22. Notice of Objection to "Order ?" Denying Disqualification;

23. December 19, 2014 e-mail correspondence from David Kiene, Senior Staff Counsel;

24. Response to Respondent's Written Statement, with the attached exhibits;

    1. August 6, 2013 e-mail correspondence from Eric Loft, Chief of the Wildlife Branch;

2. Appellant's 2013 Restricted Species Permit Renewal Application and 2013 Inventory of Animals Renewal;

3. July 7, 2014 Memorandum from David Elms, Regional Manager of the Inland Desert Region;

4. July 14, 2014 Notice of Incomplete 2013 Renewal Application for a Restricted Species Shelter Permit;

5. Appellant's August 8, 2014 correspondence and appellant's 2013 Restricted Species Permit Renewal Application and 2013 Inventory of Animals Renewal;

6. September 19, 2014 Notice of Denial of Your 2013 Renewal Application for a Restricted Species Shelter Permit and Proof of Service.

25. Notice of Motion and Motion to Strike Respondent's Response to Appellant's Written Statement, Memorandum of Points and Authorities, and Declarations of Kele Young(er) and Dan Westfall and Proof of Service;

26. Appellant's Request for Judicial Notice (2), requesting judicial notice of the following statutes:

    A. Evidence Code section 210;

    B. Evidence Code section 1280;

    C. Evidence Code section 1400;

    D. Evidence Code section 1421;

    E. Evidence Code section 1452;

    F. Evidence Code section 1453;

    G. Evidence Code section 1553

27. January 20, 2015 correspondence from David Kiene, Senior Staff Counsel;

28. Appellant's Reply Memorandum to Respondent's Response to Appellant's Motion to Strike Respondent's Response to (Respondents ?) Written Statement;

29. January 29, 2015 e-mail correspondence from appellant; and

30. Notice of Additional Damages.

The Department's evidentiary objections to Exhibit 16 (DVD of August 8, 2012 and May 22, 2013 Fish and Game Commission meetings)

8. The Department objected to Exhibit 16 on the grounds of relevance and hearsay.

9. Relevant evidence is "evidence, including evidence relevant to the credibility of a witness or hearsay declarant, having any tendency and reason to prove or disprove any disputed fact that is of consequence to the determination of the action." (Evid. Code, § 210.) Only relevant evidence is admissible. (Evid. Code, § 350.)

10. "'Hearsay Evidence' is evidence of a statement that was made other than by a witness while testifying at the hearing and that is offered to prove the truth of the matter stated." (Evid. Code, § 1200, subd. (a).) Hearsay evidence is inadmissible, unless subject to a statutory exception or as otherwise provided by law. (Evid. Code, § 1200, subd. (b).)

11. Appellant failed to explain how the DVD of the August 8, 2012 and/or May 22, 2013 Fish and Game Commission meetings is relevant to her appeal. Nor did she explain why the DVD does not constitute hearsay evidence or identify any exception to the hearsay rule under which it falls. Therefore, the Department's objection to Exhibit 16 is sustained, and Exhibit 16 was not considered for any purpose.

Appellant's requests for judicial notice

12. Appellant requested judicial notice of various Civil Code, Fish and Game Code and Government Code statutes; various California administrative regulations; Federal Rules of Civil Procedure, rule 15; an order issued by the Superior Court of the State of California, in and for the County of Kern, in *Exotic Feline Breeding Compound Inc. v. California Department of Fish and Wildlife*; and the DVD of the May 22, 2013 Fish and Game Commission meeting (collectively, Exhibit 11).

13. The Department objected to the request that judicial notice be taken of the DVD for the reasons discussed in Factual Finding 8.

14. Pursuant to Evidence Code sections 450, 451, subdivisions (a) and (d), 452, subdivision (b), judicial notice is taken of all federal rules of procedure and California statutes and administrative regulations identified in Factual Finding 12.

15. Additionally, judicial notice is taken only of the existence of the court order identified in Factual Finding 12 pursuant to Evidence Code sections 450 and 452, subdivision (d). (See, e.g., *Sosinsky v. Grant* (1992) 6 Cal.App.4th 1548, 1564-1565 [while a

court may take judicial notice of the existence of a document in a court file, it cannot take judicial notice of hearsay allegations contained in that document].)

16. For the reasons explained in Factual Findings 9 through 11, appellant's request for judicial notice of the DVD identified in Factual Finding 12 is denied. (See, e.g., *Aquila, Inc. v. Superior Court* (2007) 148 Cal.App.4th 556, 569 [only relevant material may be judicially noticed]; *Sosinsky v. Grant, supra*, 6 Cal.App.4th at pp. 1564-1565.)

17. Appellant also requested judicial notice of several provisions of the Evidence Code (Exhibit 26).

18. The Department did not object to Exhibit 26.

19. Pursuant to Evidence Code sections 450 and 451, subdivision (a), judicial notice is taken of all statutes identified in Factual Finding 17.

Background

20. The Department issued Restricted Species Shelter Permit No. 2511 (Permit) to appellant. The Permit allowed appellant to possess one Leopard, one Mountain Lion, two Indochinese Leopards, and two Siberian Tigers for humane purposes.

21. On August 1, 2013, appellant signed a 2013 Restricted Species Permit Renewal Application (Application), which the Department received on August 8, 2013. On the Application, appellant marked the boxes indicating she was seeking to renew her Permit and that she has one to five enclosures for animals.

22. Appellant did not include the requisite application, species permit, or inspection fees with her Application, instead writing on the Application that she was "Exempt" from such fees.

23. The Department treated appellant's claim that she was "Exempt" from having to pay the requisite application, species permit, and inspection fees as a request for a fee waiver. David Elms, the Department's Regional Manager for the Inland Desert Region, wrote the following memorandum on July 7, 2014, granting that request, in part:

> My staff reviewed the information provided by Ms. Kele Younger and have determined the permit fee waiver she requested for her restricted species permit application should be approved. The fee waiver is only for the permit application fee and does not waive Ms. Younger's inspection fees. Title 14, Section 671 does not provide the Department of Fish and Wildlife (Department) the authority to waive any other fees.

> Based on Department staff's knowledge of Ms. Younger's facility from past inspections and the care she is giving to her animals, we determined it is in the best interest of the animals and the Department to waive the permit application fee pursuant to Title 14, Section 671.1 (b) (10). According to restricted species application submitted by Ms. younger, the inspection fee for this facility would be $227.91. Ms. Younger must resubmit her application with the appropriate inspection fee and a copy of the letter approving the waiver of the restricted species permit application fee.
>
> Please let me know if you need any additional information.

24. On July 14, 2014, the Department returned appellant's Application to her, explaining that her Application was incomplete because she did not submit the inspection fee and the Application was completed incorrectly. The Department further explained that the permit fee of $56.14 and application fee of $56.65 were both waived, but the inspection fee of $227.91 was not. Therefore, appellant was given an additional 30 days to submit a correctly completed application and the inspection fee.

25. On August 8, 2014, appellant wrote the following letter to the Department, which included a duplicate copy of the Application she originally submitted:

> We are in receipt of your above referenced (*sic*) notice dated July 14, 2014. Following legal review of this notice it has been determined that Kele Young, (also known professionally as Kele Younger), has indeed not submitted an incomplete application ... Further, legally binding agreements were entered into with the Department and the affected parties for that inspection fee waiver ... The fact that counsel staff for DFW David Kiene has alleged that those agreements are not legally binding due to the fact that they were not reduced to writing is utterly irrelevant ... California Civil Code Sections 1619 – 1623 et.al (*sic*) unarguably establishes the fact that those agreements with the Department and the affected parties for a waiver of all fees, including the application and inspection fees are legally binding ...
>
> Moreover, pursuant to Title 14 of the CA. (*sic*) Code of Regulations Section 703, the Department retains the inherent discretion to issue permits, and amend existing permits with the conditions it determines are necessary to protect native wildlife, agriculture interests, and animal welfare, and/or human health and safety, as unarguably demonstrated in the Department's inherent discretion to waive the application fee ...

Thank you for your prompt assistance in this matter ...

26. Appellant's Permit expired November 9, 2013.

27. On September 19, 2014, the Department denied appellant's Application because she did not submit a completed Application and pay the requisite inspection fee. The Department provided appellant with the following three options: 1) pay the $227.91 inspection fee and submit it to the Department with a completed Application; 2) forgo renewing her Permit and notify the Department which permitted facility for Restricted Species the animals identified on her Restricted Species Permit Inventory of Animals will be transferred to and when that transfer will occur; or 3) pay the $227.91 inspection fee and submit it to the Department along with a completed Application and request for appeal.

28. Appellant sent the Department her Notice of Appeal on October 15, 2014. However, she did not pay the $227.91 inspection fee.[5]

Discussion

29. Appellant failed to cite any statutory or regulatory authority that supports her position that the Department has the authority to waive the inspection fee associated with her Application. As Mr. Elms explained in his memorandum approving appellant's request for a fee waiver discussed in Factual Finding 23, as well as in Legal Conclusion 4, California Code of Regulations, title 14, section 671.1, subdivision (b)(10), limits the Department's authority to waive fees to shelter permit fees. The Department has interpreted that regulation to include authority to waive the non-refundable application fee.[6] But the Department has never interpreted the regulation to include the authority to waive inspection fees, which are authorized under California Code of Regulations, title 14, sections 671.1, subdivision (c)(2)(B), and 703, subdivision (a)(1)(A)(19). Nor is the regulation reasonably subject to such an interpretation.

30. Contrary to appellant's argument, Fish and Game Code section 1002 does not support her argument that she is entitled to a waiver of the inspection fees. That statute applies to scientific collecting permits, not restricted animal species permits, and is therefore inapplicable. California Code of Regulations, title 14, section 671.8, subdivision (a), is also inapplicable because it applies to the approval of applications for newly built facilities.

31. All arguments of the parties not specifically addressed herein were considered and are rejected.

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[5] The Department's denial of appellant's application implicitly included the denial of her request for a waiver of the inspection fee. Therefore, appellant's appeal is interpreted as including the denial of her request for a fee waiver.

[6] The validity of the Department's interpretation is not the subject of this appeal, and no opinion is expressed about such interpretation.

Conclusion

32. When considering all admissible evidence, appellant's appeal should be denied because the Department has no authority to waive the inspection fee associated with her Application. Furthermore, she never submitted a completed Application.

LEGAL CONCLUSIONS

Jurisdiction

1. An Administrative Law Judge with the Office of Administrative Hearings has jurisdiction to issue a proposed decision on appellant's appeal of the denial of her Application and request for a fee waiver. California Code of Regulations, title 14, section 671.1, subdivision (c)(7), provides:

> Appeal. Any applicant or permittee who is denied a permit, an amendment to an existing permit or has a permit suspended or revoked by the department pursuant to these regulations may appeal that denial, suspension, or revocation by filing a written request for an appeal with the commission. The request for an appeal shall either be postmarked, if sent by the Unites States mail or overnight carrier, or received by the commission, if sent by electronic mail, or facsimile no later than 30 days after the date of the proof of service accompanying the department's notice of denial, suspension, or revocation. The commission shall not accept a request for an appeal that is submitted after the 30 day deadline to request an appeal. If the 30 day deadline falls on a weekend or holiday, the request for appeal will be accepted until the close of business on the first state business day following the deadline to submit a request for appeal.
>
> (A) The commission's president may appoint a commissioner, a current or former executive director of the commission, a current employee of the commission, or a member of the State bar of California in the active practice of law to serve as a hearing officer.
>
> (B) No later than 30 days after filing an appeal request, a person requesting an appeal (appellant) shall submit a written statement to the commission that specifically identifies the legal and factual grounds for challenging the department's action. The appellant's written statement shall be signed by the appellant under penalty of perjury. Upon receipt, the commission shall forward to the department a copy of all

appeal-related materials it receives from the appellant, including a copy of the request for an appeal, and the appellant's written statement. The appellant may receive an additional 30 days to submit a written statement if no later than 30 days after filing a re-quest for an appeal the appellant either: (i.) receives a written stipulation from the department agreeing to an additional 30 days to submit a written statement and submits a copy of the stipulation to the commission, or (ii.) submits a written request to the hearing officer for a determination that good cause exists to grant an additional 30 days to submit a written statement. The hearing officer shall provide the department with a copy of the request for additional time and an opportunity to submit a written objection to the request.

(C) No later than 30 days after receipt of the appellant's written statement, the department may submit a response to the commission, with a copy sent to the appellant, along with any supporting documentary evidence and/or declarations under penalty of perjury.

(D) No later than 15 days after receipt of the department's response, the appellant may submit a reply to the commission signed by the appellant under penalty of perjury, with a copy sent to the department that addresses arguments and evidence raised in the department's response. The appellant's reply shall not contain any new evidence or new factual or legal grounds for challenging the department's action.

(E) Following the appellant's and the department's submittals on the appeal, the hearing officer may request additional information, including testimony under oath, from either party, and may permit either party to present additional information or rebuttal if the hearing officer determines such to be helpful in reaching a correct decision.

(F) In any appeal of the department's denial of an application for a permit or to amend an existing permit, if the hearing officer determines the appeal is based upon new evidence or factual information that was not included in the application or otherwise submitted to the department prior to the department's denial, the hearing officer shall direct the applicant or permittee to file a new application or seek reconsideration by the department, and the request for appeal shall be closed.

(G) No later than 60 days after receipt of all submittals and any additional information or rebuttal permitted by the hearing officer under subsection 671.1(c)(7)(D), the hearing officer shall prepare and submit a proposed decision to the executive director of the commission. The decision shall contain proposed findings and reasons for the commission's action. Upon receipt, the executive director of the commission shall provide both parties a copy of the hearing officer's proposed decision. A cover letter accompanying the proposed decision shall indicate the date when the commission will consider the proposed decision and a deadline for the parties to comment on the proposed decision. Copies of the proposed decision shall include a proof of service indicating the date the proposed decision is mailed to the parties. Each party may submit written comments on the proposed decision to the commission, however, these comments shall not exceed two pages, and they shall not refer to or introduce any new factual information or evidence that was not previously submitted to the commission.

(H) At a meeting of the commission no later than 60 days after receipt of the hearing officer's proposed decision, the commission shall consider adoption of the proposed decision, unless good cause exists to delay consideration of the proposed decision. The commission may by order adopt, revise or reject the proposed decision. The commission shall serve both parties a copy of the commission's order and decision. The order is final.

(I) A party may request judicial review by filing a petition for writ of mandate in accordance with Section 1094.5 of the Code of Civil Procedure within 30 days from the date of service (postmark) of the order. The record of the proceedings as designated by the petitioner shall be prepared by the commission and delivered to petitioner's counsel or, if appearing pro se, the petitioner within 30 days after petitioner's request and upon payment of the fee specified in Section 69950 of the Government Code.

Applicable Law

2. California Code of Regulations, title 14, section 671.1, subdivision (a), provides: "General. It is unlawful for any person to import, export, transport, maintain, sell, dispose of, or use for any purpose any animal restricted by Section 671 except as authorized in a permit issued by the department." Leopards, Mountain Lions, Indochinese Leopards,

and Siberian Tigers are animals restricted by California Code of Regulations, title 14, section 671, subdivision (c)(2)(K)(1).

3. "The applicant for a new permit, amendment to an existing permit, or permit renewal shall submit the completed application or document, and fee, as specified in Section 703, to the address listed on the application." (Cal. Code Regs., tit. 14, § 671.1, subd. (c)(3).)

4. California Code of Regulations, title 14, section 671.1, subdivision (b), specifies that certain permits issued by the Department have fees associated with them:

> Permits and Fees. The following permits have fees specified in Section 703 that shall be adjusted annually. The department may issue permits and amend existing permits with the conditions it determines are necessary to protect native wildlife, agriculture interests, animal welfare, and/or human health and safety for:
>
> [¶] ... [¶]
>
> (10) Shelter. Issued to any person who is a resident, who possesses the qualifications listed in subsection 671.1(c)(1), and who has a statement in writing signed by the department's regional manager with jurisdiction over the proposed facility verifying the need for a shelter or similar facility in the area, to transport and possess restricted species for humane purposes only. *The permit fee may be waived* upon recommendation of the regional manager when he/she determines it is in the best interest of the public, the animal, or the department to do so. Additional requirements are specified in subsection 671.1(c)(3).

(Italics added.)

5. California Code of Regulations, title 14, section 671.1, subdivision (c)(2), imposes the following types of fees for the various permits issued by the Department:

> Fees. The following application and inspection fees specified in Section 703 are required and shall be adjusted annually.
>
> (A) Application. The applicant shall pay a nonrefundable application fee when submitting an application for a new permit, amending an existing permit, or renewing a permit.
>
> (B) Inspection. The applicant shall pay an inspection fee for the type of inspection as required in Section 671.8. Applicants

> for Aquaculture permits may have the inspection fee waived if a fish pathologist as defined in subsection 245(b)(5) has inspected the applicant's facilities within the last six months, determines that the facility's housing meets the minimum applicable requirements in Section 671.7 and no fish health issues have been identified in the past year. If not waived, the applicant for an Aquaculture permit shall pay an aquaculture inspection fee.

The applicable fees must be included with an application to renew a permit. (Cal. Code Regs., tit. 14, § 671.7, subd, (c)(3).)

6. California Code of Regulations, title 14, section 703, subdivision (a)(1)(A), sets the amounts of the fees charged by the Department as follows:

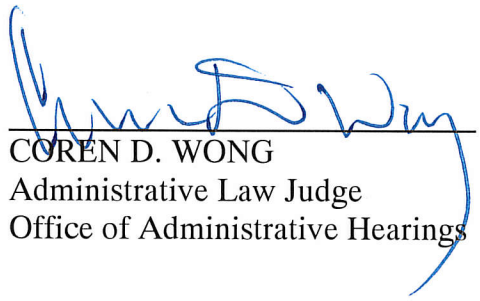
> 1. Restricted Species Permit Application (New) $104.25
>
> 2. Restricted Species Permit Application (Amended or Renewal) $56.65
>
> [¶] ... [¶]
>
> 16. Shelter $56.14
>
> [¶] ... [¶]
>
> 19. Fee for annual inspection (All permits except Aquaculture and Fish) based on number of Animal Enclosures:
>
> | | |
> |---|---|
> | 1-5 Enclosures | $227.91 |
> | 6-25 Enclosures | $319.95 |
> | 26-50 Enclosures | $519.72 |
> | 51-100 Enclosures | $815.22 |
> | 101-500+ Enclosures | $3,002.27 |

7. Appellant applied for renewal of her Permit, but did not include the applicable application, shelter permit, and inspection fees. Nor did she submit a completed Application. The Department granted her a waiver for the application and shelter fees, but not the inspection fee. As noted in Legal Conclusion 4, the Department's authority to waive fees associated with the renewal of appellant's Permit was limited to the application and shelter fees. Therefore, appellant's appeal from the Department's denial of her Application and request for a waiver of the inspection fee should be denied.

ORDER

Appellant Kele Young(er)'s appeal from the Department of Fish and Wildlife's denial of her 2013 Restricted Species Permit Renewal Application and request for a waiver of the inspection fee is DENIED.

DATED: March 12, 2015



COREN D. WONG
Administrative Law Judge
Office of Administrative Hearings

Kele Young (er)
P.O. Box 580103
North Palm Springs, CA. 92258

Appellant in Proper Person

BEFORE THE CALIFORNIA FISH AND GAME COMMISSION

KELE YOUNG, an Individual, APPELLANT, v. CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, and Does 1 – 100, inclusive, CHARLTON H. BONHAM, individually, and in his official capacity as Director, California Department of Fish and Wildlife, and Does 1 – 10 inclusive, RESPONDENTS.	OBJECTIONS TO PROPOSED DECISION, REQUEST TO VACATE COMMISSION'S JUNE 10 – 11, 2015 AGENDA ITEM TO RENDER A DECISION ON THIS MATTER *UNTIL THE FIRST AVAILABLE SOUTHERN* CALIFORNIA COMMISSION MEETING SO THAT APPELLANT MAY BE PRESENT TO ADDRESS THE COMMISSIONERS ON THIS MATTER

TO ALL OF THE PARTIES AND THEIR ATTORNEYS OF RECORD, Please take NOTICE that :

I am the Appellant in the hereinabove entitled action or special proceeding, and hereby submit the following objections to the proposed decision of the Office of Administrative Hearings in this matter . . .

Objection 1. To attorney Wong and the Office of Administrative Hearings deciding their own disqualification in this matter . . .

Objection 2. To the matter being decided on written submissions only . . .

Objection 3. To the entirety of attorney Wong's statement of Factual Findings pg. 2 and pg. 3 # 1 - # 7 . . .

Appellant's Opening Brief was timely submitted pursuant to the specific requirements of Title 14 of the California Code of Regulations Section 671.7 et seq. (hereinafter 671.7 et seq.) . . . The Department of Fish and Wildlife's January 2, 2015 opposition was grossly untimely pursuant to 671.7 et seq., as well as Code of Civil Procedure 1005 (plus five days for mailing) as it was not filed within 30 - 35 days after

Appellant's timely Filing . . . As stated in her Motion to Strike the Department's untimely opposition, Appellant did not seek nor require any extension of time to submit her Opening Brief and timely submitted that pleading on November 13, 2014, and thus, the clock began to tick from [that date] 671.7 et seq. . . The Department failed to seek an extension of time to file a [late opposition] 671.7 et seq. . .

Further, the improper closing of the record on January 20, 2015 without considering Appellant's timely submitted Reply Memorandum to the Department's Opposition to her Motion to Strike was willfully and grossly negligent . . . Moreover, attorney Wong's willful failure to consider the applicable law, and relevant and admissible evidence including but not limited to : the timely and properly submitted DVD of the Commission's own Aug. 2, 2012, and May 22, 2013 meetings, which Plaintiff properly laid the foundation *for in Appellant's Argument pages 9 – 10, and Appellant's Statement of the Case pages 1 – 3, and the prior* **GOVERNING** Court ruling in The Exotic Feline Breeding Compound Inc. **[W]**rit litigation, speaks volumes as to attorney Wong's own personal corruption, and utter lack of legal ethics and creditability . . .

In the end, this leaves nothing for the Commission to consider of attorney Wong's opinions, as they are merely bought and paid for, and utterly without merit . . . What the Commission must consider at this point, is just how long they intend to be led around by Mr. Mastrup, Mr. Bonham, and Mr. Wong, and their continuing conspiracy to enforce their unlawful agenda of underground regulation which thereby forces licensees into unnecessary litigation on the issue of their qualification for a waiver of permit requirements, and further, at an approximate cost of over one hundred thousand tax payer dollars per case . . .

Plaintiff has no issue with going public on this matter, nor in seeking criminal and civil prosecution *in this matter, but prior to that, she requests an opportunity to address the Commission in an open public* meeting forum, with an official record of that meeting . . . Unfortunately, Mr. Mastrup consistently schemes to prohibit licensees including Appellant from open access to the Commissioners by delaying and organizing Commission agenda items until it is virtually impossible for a licensee to appear on their or others behalf . . . Plaintiff is unavailable on June 10 – 11, 2015 as she is appearing at that time on other non - related law and motion hearings in southern California. Further, the prohibitive costs of traveling so far to publicly address the Commissioners is unreasonable, as the matter could be effectively and timely addressed at the next available southern California Commission meeting . . . Accordingly, in the inherent interests of justice Appellant requests that this matter be vacated from the June 10 – 11 Commission agenda, and reset for hearing at the first possible southern California Commission meeting . . .

Dated : May 28, 2015

Kele Young (er) Appellant

State of California – Natural Resources Agency
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
1416 9th Street, Ste. 1341
Sacramento, CA 95814
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

June 2, 2015

California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Subject: Response to Kele Younger's May 28, 2015 Objections/Request to Vacate

Dear Commissioners:

This letter is in response to Kele Younger's "OBJECTIONS TO PROPOSED DECISION, REQUEST TO VACATE COMMISSION'S JUNE 10-11, 2015 AGENDA ITEM..." dated May 28, 2015 *In the Matter of the Denial of the Application to Renew Restricted Species Permit Issued to Kele Younger.*

The Proposed Decision in this appeal, issued by Administrative Law Judge Coren Wong on March 12, 2015, and the administrative record, address her numerous objections. The Department respectfully requests that the Commission adopt the Proposed Decision in its entirety.

However, the Department objects to Ms. Younger's request to delay the Commission's consideration of her appeal from the June 10-11, 2015 meeting until the next meeting held in Southern California, which will occur on October 7-8, 2015, in Los Angeles. Ms. Younger claims that she is unavailable to attend the June meeting and that the cost of attending a Commission meeting outside of Southern California would be unreasonable. However, since she initiated the appeal last October, Ms. Younger has had many opportunities to present arguments to the Commission explaining why her facility should get a waiver of inspection fees. She has, in fact, submitted over a hundred pages of arguments and supporting materials. At a Commission meeting, she would likely mostly re-iterate arguments she had previously made in detail. Considering that the issue in this appeal is a very simple, straightforward interpretation of California Code of Regulations, title 14, section 671.1, subdivision (b)(10)[1] ("Section 671.1(b)(10)"), i.e., whether her facility is entitled to receive a waiver of a modest annual inspection fee of $221.27,[2] she has had ample due process. In any event, the Department has granted her facility all waivers for which it is qualified: i.e., waivers of the permit and permit application fees.

Furthermore, her large-cat facility has been unpermitted since November 9, 2013, has not been inspected since December 4, 2011; and she has not paid any required fees since the permit was

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[1] Section 671.1(b)(10) states, in part, "The permit fee may be waived upon recommendation of the regional manager when he/she determines it is in the best interest of the public, the animal, or the department to do so."

[2] C.C.R., tit. 14, § 703(a)(1)(A)(19), which states in part, "Fee for annual inspection (All permits except Aquaculture and Fish) bases on number of Animal Enclosures: 1-5 Enclosures $221.27."

last renewed in 2012. If the Commission's decision is delayed until the October meeting, this simple appeal would last a year, her facility would be unpermitted for at least two years, she would not have paid any fees in three years, and her facility would have been uninspected for nearly four years.

In conclusion, the interests of the State of California in resolving this matter and her facility's outstanding permitting issues, and inspecting her facility to ensure it complies with regulations, outweigh her interest in attending a future meeting and further delaying the appeal's outcome by four months. For these reasons, the Department respectfully requests that the Commission keep the matter on its June 10-11 meeting agenda.

If you have any questions, please do not hesitate to contact me at the above address, telephone number (916) 651-7646, or by e-mail at David.Kiene@wildlife.ca.gov.

Sincerely,

David Kiene
Senior Staff Counsel

Cc: Kele Younger

CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR REGULATORY REQUESTS
Received Through April 9, 2015

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant (previously Accept): FGC is *willing to consider* the petition through a process **Deny (previously Reject):** FGC is *not willing to consider* the petition
Refer: FGC *needs more information* before deciding whether to grant or deny the petition

Green cells: Referrals to DFW for more information **Blue cells:** Referrals to FGC staff or committee for more information
Lavender cells: Accepted and moved to a rulemaking **Yellow cells:** Current action items

Date Received	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
2/6/2015	Michel & Associates, representing National Rifle Association	Methods of take - small game	T14, Sec. 311	Requests removing improper restrictions on possession of firearms necessary for self-defense.	Referred on 4/8/2015 to DFW for recommendation.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 upland game rulemaking.**	
2/4/2015	James Moore	Restricted fishing		Requests lifting the fishing restrictions from the banks of the Sacramento River, immediately below the Red Bluff Diversion Dam.	Referred on 4/8/2015 to DFW. Proposal currently under review by DFW.	Action scheduled 6/10-11/2015 **Staff Recommendation: Will be included in Aug 2015 notice for 2016 sport fish rulemaking.**	
2/12/2015 FGC meeting	Robert Moore	Take of wild turkey	T14, Sec. 354	Requests language be added to section 354(c) to include wild turkeys, so as to require the proper point when archery hunting wild turkeys.	Referred on 4/8/2015 to DFW for recommendation.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 upland game rulemaking.**	
2/22/2015	Meyer Ranch	Abalone		Requests the start time be back to 1/2 hour before sunrise and reduce the total take of Abalone to 15 per year to promote opportunities for all abalone fishermen.	Action scheduled 6/10-11/2015 **Staff Recommendation: Deny; to be considered during abalone fishery management plan development process.**		
2/7/2015	Eric Mills	Method of take, birds and mammals		Request to prohibit robotic/electronic duck decoys.	Action scheduled 6/10-11/2015 **Staff Recommendation: Deny; no new data to support request.**		
2/18/2015	William Toth	Feather River spring salmon		Request to release low flow provisions up to the Hwy 62 bridge to permit increased fishing opportunities.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 Central Valley Salmon rulemaking.**		

Date Received	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
3/18/2015	Hazel Tove	Ferrets		Request to permit ferrets under certain circumstances.	Action scheduled 6/10-11/2015 **Staff Recommendation: Deny; no new data to support request.**		
2/27/2015	George Madriaga	Hedgehogs		Request permit of hedgehogs under certain circumstances.	Action scheduled 6/10-11/2015 **Staff Recommendation: Deny; no new data to support request.**		
3/8/2015	Jim Jackson	Sporfish - Inyo Cnty. Limits		Requests limits on fishing for Pine Creek including size and possession restrictions.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to Fishery Management Council for consideration in 2017 sport fish rulemaking.**		
3/25/2015	Ken Bates	Squid		Requests emergency daily boat limit of 50 short tons squid for conservation measure next season.	**Withdrawn by petitioner on 4/15/2015**		
3/3/2015	William Anderson	Waterfowl		Requests to increase the 25 cartidge limit for waterfowl hunting to reduce the physical exertion it takes to make multiple trips to vehicles for additional cartridges.	Action scheduled 6/10-11/2015 **Staff Recommendation: Deny; the regulatory rationale is not linked to bag limits but rather sportsmanship.**		
3/20/2015	Andy Brown	Experimental Squid permits		Requests change to fishery management plan and regulations to allow experimental market squid vessel permit.	Action scheduled 6/10-11/2015 **Staff Recommendation: Deny regulations request; Refer to fishery management plan review process.**		
3/20/2015	Scott Rassmussen	Experimental Squid permits		Requests change to fishery management plan and regulations to allow experimental market squid vessel permit.	Action scheduled 6/10-11/2015 **Staff Recommendation: Deny regulations request; Refer to fishery management plan review process.**		
2/19/2015	Kieth Riggenberg, Outdoor Sportsman Coaltion of Calfornia	Method of take	Section 311, T14	Requests removing improper restrictions on possession of firearms necessary for self-defense.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 upland game rulemaking.**		

Date Received	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
2/19/2015	Randy Walker, The California Sportsman Lobby	Method of take	Section 311, T14	Requests removing improper restrictions on possession of firearms necessary for self-defense.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 upland game rulemaking.**		
3/4/2015	Ronald LaForce, United Outdoor Sportsmen	Feather River salmon		Request and early run salmon season to commence May 2, 2015, with a possession limit of 1 fish per day.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 Central Valley salmon rulemaking.**		
3/23/2015	California Department of Water Resources (DWR)	Central Valley Salmon		Requests elimination of the size and bag limits for Striped Bass to reduce predation on Central Valley Spring Run Chinook Salmon, Central Valley Steelhead, and Green Sturgeon.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 Central Valley salmon rulemaking.**		
3/5/2015	Sonoma County Fish and Wildlife Commission	Inland Filleting of Salmonoids	Section 1.45, T14	Request to abolish fillet requirements for inland salmonoids.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 sport fish rulemaking.**		
3/8/2015	Gary Hansen, Glenn County Fish, Game and Recreation Commission	Inland filleting of salmonoids	Section 1.45, T14	Request to abolish fillet requirements for inland salmonoids.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to 2016 sport fish rulemaking.**		
4/8/2015	Charlie Beck	Steelhead fishing		Request for review of low flow regulation in Region 3 to permit more opportunity including: lowering low flow guidelines on the Gaula River to 75 cfs and the Navaro to 100 cfs, extend trout fishing from fourth Saturday in May to September 30.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to DFW for evaluation and recommendation.**		
4/8/2015	Neil Light	Steelhead fishing		Request closure of Gaula River north fork, and the Garcia from HWY 1 Bridge.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to DFW for evaluation and recommendation.**		
4/8/2015	Erik Owen	Steelhead fishing		Request adoption of low flow guidelines of 75cfs on the Koala and 100cfs on the Navarro, and consider articifical only restrictions	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to DFW for evaluation and recommendation.**		
4/8/2015	David Misakign	Steelhead fishing		Request adoption of low flow guidelines of 75cfs on the Gaula River and 100cfs on the Navarro.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to DFW for evaluation and recommendation.**		

Date Received	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
4/8/2015	Dan Brown	Steelhead fishing		Request adoption of low flow guidelines of 75cfs on the Gaula River and 100cfs on the Navarro and to leave the main stems open year-round.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to DFW for evaluation and recommendation.**		
4/2/2015	Ed Given	Low Flow, Region 3		Request to reconsider the low flow guidelines implemented for Region 3.	Action scheduled 6/10-11/2015 **Staff Recommendation: Refer to DFW for evaluation and recommendation.**		
4/8/2015	Al Gearhardt	Abalone		Request change in Abalone fishing start time to permit rock pickers opportunity.	Action scheduled 6/10-11/2015 **Staff Recommendation: Previously denied 10/8/2014; regulations recently changed and abalone management plan under review.**		
4/9/2015	Janie Gault	Trapping	465.5	Request to ban all trapping in California, and ban the use of dogs for all hunting activities.	Action scheduled 6/10-11/2015 **Staff Recommendation: (1) Deny; requires statutory change. (2) Deny; previously denied and no data or information submitted to support change.**		

CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR NON-REGULATORY REQUESTS
Received Through April 9, 2015

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant (previously Accept): FGC is *willing to consider* the petition through a process **Deny (previously Reject):** FGC is *not willing to consider* the petition
Refer: FGC *needs more information* before deciding whether to grant or deny the petition

Green cells: Referrals to DFW for more information **Blue cells:** Referrals to FGC staff or committee for more information
Lavender cells: Accepted and moved to a rulemaking **Yellow cells:** Current action items

Date Received	Name of Petitioner	Subject of Request	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
1/30/2015	Jim Brockett James McCabe	Permit for Possesstion of Rattlesnales	Requests permit to possess rattlesnakes for the purposes of (a) extracting venom for developing anit-venom serums and (b) dog aversion training.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Deny; request requires statutory change.**		
2/18/2015	Jono Wilson Nature Conservancy	Abalone Fishery Manangement Plan	Management requests for consideration during the Abalone FMP process.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Will be considered by MRC. Refer proposal to DFW for consideration during FMP review.**		
3/25/2015	Stephen Smith	FGC meetings	Request to webcast all public meetings as webinars so that persons who can't attend at the location may still comment.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Deny; FGC does not have sufficient staff.**		
3/25/2015	Ken Bates	Squid Fishery Management Plan	Initiate Squid FMP review to allow experimental squid permits	**Withdrawn by petitioner on 4/15/2015**		
4/8/2015	Kimberly Richard	Baby seals	Request for review of issue by MRC to save the seals.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Deny; FGC has no authority over marine mammals, refer to National Marine Fisheries Service.**		
4/8/2015	Richard James	Tomales Bay Oyster Farming Oversight	Request that the Commission provide better and more consistent oversight of the Tomales Bay oyster faming operations.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Grant; FGC is working with DFW and growers to determine how to provide more consistent oversight.**		

Date Received	Name of Petitioner	Subject of Request	Short Description	FGC Decision	DFW/FGC Staff Response	Final Action, Other Outcomes
4/8/2015	Al Gerhardt	Sea lions	Request consideratio of a management plan for Sea lions.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Deny; FGC has no jurisdiction over marine mammals, responsibility of National Marine Fisheries Service.**		
4/9/2015	Kathy Lynch	Michael Sutton	Request Commissioner Sutton recuse himself from participating in processes where Audobon has a clear interest.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Deny; authority of Fair Political Practices Commission or Governor's office.**		
4/9/2015	Kim Richard	Budget resources	Request regulations that permit adopt a California critter as a way to raise money from nonconsumptive users and sustain habitat.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Deny; requires statutory change.**		
4/9/2015	William Chamberlain	Central management	Request having one central agency to manage natural resources that trancend state lines including wildlife, water, air, and mining to conform policies with with biological borders not artificial state lines.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Deny; requires statutory change.**		
4/9/2015	Eric Mills, Edward Simpson, Jen Dowdy, Jill Beckett	Live animal food markets	Request to add consideration of live animal food markets on the agenda, in particular to outlaw the importation of bullfrogs and other amphibians.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Deny; under evaluation by DFW.**		
4/9/2015	Mark Hennely	Humbolt Bay Maricuture Project	Request that the Commission keep watching this development given it's potential impact on Black brandt, support a full EIR, and consider wieghing in on the project.	Action scheduled 6/10-11/2015 **Staff Recommendation:** **Grant; FGC jurisdiction is limited, will monitor the issue.**		

California Fish and Game Commission

Staff Report on Streamlining Routine Regulation Changes

June 1, 2015

Staff from the California Fish and Game Commission (Commission) and the California Department of Fish and Wildlife (Department) spend a significant amount of time on annual, routine, non-controversial rulemakings. Creating more efficient and responsive processes that still allow Commission oversight, but without the rulemaking workload, would free Commission and Department staff time to devote to other high-priority regulation changes as well as policy review, amendment and development, for which there is currently limited capacity.

Rulemakings that are largely driven by objective, empirical data generally do not require discretionary input as the proposed changes are set based on an accepted protocol, criteria or procedure; historically these types of rulemakings have had minimal changes from year-to-year and, as a result, limited public and FGC engagement. In other cases, FGC rulemakings are developed to conform with federal regulations where there is limited or no FGC discretion; in these cases, much of the public debate and engagement takes place at the federal level (i.e., Pacific Fishery Management Council) and historically the state has always conformed with those regulations. And, in at least one case, existing regulations may be unnecessary.

At its April 2015 meeting, the California Fish and Game Commission (Commission) directed staff to investigate the possibility of streamlining some of the routine rulemakings to create more efficient processes that still allow Commission oversight and provide notification to the Commission and public. Staff was directed to bring an initial proposal to the June 2015 Commission meeting.

Staff has identified a number of annual regulation changes that are potential candidates for streamlining:

- Central Valley salmon sport fishing
- Commercial and recreational groundfish fishing
- Commercial and recreational ocean salmon fishing
- Commercial and recreational tuna fishing
- Commercial and recreational Pacific halibut fishing
- Emergency closures for inland fisheries at risk due to drought
- Mammal hunting tag quotas
- Annual and five year Private Lands Wildlife Habitat Enhancement and Management Area plans and license renewals (initial plans would not be candidates)

After reviewing the relevant statutes and regulations, the degree to which accepted protocols, procedures or criteria are used, and historical public and Commission engagement in the candidate rulemakings, staff believes mammal (big game) hunting tag quotas and inland fisheries at risk due to drought are the most appropriate rulemakings to first consider for developing streamlined annual processes.

Unless directed otherwise, staff expects to bring to the August 2015 meeting a draft initial statement of reasons for big game hunting tag quotas and a draft initial statement of reasons for emergency closures for inland fisheries at risk due to drought. Please see below for conceptual descriptions and rationale for the first two proposed streamlining processes.

Big Game Hunting Tag Quotas

In the initial scoping of this issue, staff has determined that big game tag quotas have historically appeared in Title 14 of the California Code of Regulations as a matter of information, but there are no statutory requirements to list them in regulation. The Commission may establish season dates, bag and possession limits, and boundaries for big game hunting; however, big game tag quotas is not a regulation that is enforceable or that may be violated and is therefore not necessary to include in regulation.

Annual tag quota regulation amendments have created the majority of annual mammal regulations; for example, in the last five years tag quota amendments have averaged over 93% of the mammal hunting rulemaking packages. Since they are not required to be in regulation, tag quotas could be presented in an annual report to the Commission outside of the rulemaking process, considerably reducing the overall regulatory workload for the annual hunting regulations. To maintain public opportunity to participate, scoping and comment periods could be noticed and held by the Department regarding potential changes and recommendations following the conclusion of population data collection and analysis.

Commission and Department staff intends to develop an initial statement of reasons (Title 14, Sections 360, 361, 362, 363 and 364) and request to go to notice at the Commission's August meeting, with discussion at the October meeting and adoption at the December meeting; this allows the regulations to become effective before the Commission finalizes mammal hunting regulations for the 2016-2017 seasons.

The proposed rule would establish criteria and procedures for establishing quotas and how the Commission and public will be notified.

Emergency Closures for Inland Fisheries at Risk Due to Drought

Drought conditions continue in California at record levels in the state's recorded rainfall history. While the current drought could end next year, it is a pattern that California will experience again, as research shows recurring periods of drought and mega-drought in California over the last 1,000 years. When multi-year droughts do occur, hydrological conditions can deteriorate relatively quickly, creating inadequate water quality and quantity to support fisheries. Decisions about when to close a fishery due to inadequate water quality or quantity do not require the deliberations and discretionary input of the Commission for each and every water body if they are based on objective criteria adopted by the Commission with public input.

Conceptually this long-term solution will be similar to the emergency regulation proposed under Agenda Item 19, where specific criteria must be met and a notification process for the Commission and public is established. Department and Commission staff will work together to develop a proposal that refines the emergency approach based on lessons learned in the coming weeks and feedback from the public.

California Department of Fish and Wildlife News Release

May 18, 2015

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California's State Wildlife Action Plan 2015 Available for Public Review

The California Department of Fish and Wildlife (CDFW) has released the draft California State Wildlife Action Plan 2015 Update (SWAP 2015) and is seeking public input. Public input will help shape the final SWAP 2015, which will be completed by October 2015. The draft SWAP 2015 is available online at www.wildlife.ca.gov/SWAP. Written comments on SWAP 2015 can be submitted on the website, by emailing SWAP@wildlife.ca.gov or by mail to SWAP 2015 Update, California Department of Fish and Wildlife, 1416 Ninth Street, 12th Floor, Sacramento, CA 95814. The comment period is open from May 18 through July 2, 2015.

SWAP 2015 is a comprehensive, statewide plan for conserving California's fish and wildlife and their vital natural habitats for future generations. It is part of a nationwide effort by all 50 states and five U.S. territories to develop conservation action plans and participate in the federally authorized State and Tribal Wildlife Grants (SWG) Program.

Congress created the SWG program in 2000, recognizing the need to fund programs for the conservation of wildlife diversity. California's first SWAP was completed by California Department of Fish and Game (now CDFW) and approved by the U.S. Fish and Wildlife Service (USFWS) in 2005. CDFW has received approximately $37 million in federal support for the state's wildlife conservation activities through the SWG program from 2005 through 2014. The SWG program requires that SWAPs be updated at least every 10 years. CDFW has now prepared the draft SWAP 2015, which is the first comprehensive update of SWAP 2005. SWAPs are required to include provisions to ensure public participation in the development, revision and implementation of projects and programs.

SWAP 2015 focuses on conserving wildlife in the nation's most biologically diverse state while considering the growing human population, changing climate and the implications to the state's natural resources. SWAP 2015 is a flexible but scientifically grounded plan. Employing an ecosystem approach to conserve and manage diverse habitats and species, the plan creates and provides a blueprint for conservation actions necessary to respond to the highest priorities of California's aquatic, marine and terrestrial resources in a coherent manner. Its implementation relies on making important and helpful conservation information more accessible to resource managers and the public, and on developing lasting partnerships with a broad array of governments, agencies, organizations, businesses and citizens. With help from many partners, CDFW's vision for the state's wildlife is to sustain the floral and faunal biodiversity of California over the next decade and establish the conservation framework for the decades that follow.

Public meetings to provide information about SWAP 2015 will be held in Sacramento, Oakland, San Diego and Los Angeles. See www.wildlife.ca.gov/SWAP for more details.

###

For more than two years, California has been dealing with the effects of drought. To learn about all the actions the state has taken to manage our water system and cope with the impacts of the drought, visit www.ca.gov/drought.

Every Californian should take steps to conserve water. Find out how at www.saveourwater.com/.

Subscribe to CDFW News via e-mail or RSS feed at www.wildlife.ca.gov/news.

May 2015
Public Draft

California State Wildlife Action Plan

2015 UPDATE

A Conservation Legacy for Californians

EXECUTIVE SUMMARY

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Public Draft

CALIFORNIA STATE WILDLIFE ACTION PLAN 2015 UPDATE - EXECUTIVE SUMMARY

A Conservation Legacy for Californians

Prepared by

California Department of Fish and Wildlife

With Assistance from

Ascent Environmental, Inc.

Foundations of Success

Blue Earth Consultants, LLC

May 18, 2015

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Acronyms and Abbreviations

ACE	Areas of Conservation Emphasis
ACEC	Areas of Critical Environmental Concern
AF	AcreFeet
AFB	Air Force Base
AFRP	Anadromous Fish Restoration Program
AFWA	Association of Fish and Wildlife Agencies
AML	Appropriate Management Levels
BCP	Budget Change Proposal
BDCP	Bay Delta Conservation Plan
BIOS	Biogeographic Information and Observation System
BLM	U.S. Bureau of Land Management
BMP	Best Management Practices
BRBP	Blue Ridge Berryessa Partnership
BSSC	Bird Species of Special Concern
CAL FIRE	California Department of Forestry and Fire Protection
CalEMA	California Emergency Management Agency
CalEPA	California Environmental Protection Agency
CalNASP	California National Archery in the Schools Program
CalSTA	California State Transportation Agency
CalTIP	Californians Turn in Poachers and Polluters
Caltrans	California Department of Transportation
CAMP	Campaign Against Marijuana Planting
CAPP	Conceptual Area Protection Plan
CBC	California Biodiversity Council
CCAS	California Climate Adaptation Strategy
CDFG	California Department of Fish and Game

CDFW	California Department of Fish and Wildlife
CDNPA	California Desert Native Plants Act
CDOF	California Department of Finance
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CERES	California Environmental Resources Evaluation System
CESA	California Endangered Species Act
CFA	Code of Federal Regulations
CHAT	Crucial Habitat Assessment Tool
CIB	California Interregional Blueprint
CISR	Center for Invasive Species Research
CLNWS	China Lake Naval Weapons Station
CNDDB	California Natural Diversity Database
CNRA	California Natural Resources Agency
Commission	Fish and Game Commission
CTP	California Transportation Plan
CVFPP	Central Valley Flood Protection Plan
CVP	California Central Valley Project
CVPIA	Central Valley Improvement Protection Act
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships
DBW	Division of Boating and Waterways
Delta Reform Act	Sacramento-San Joaquin Delta Reform Act of 2009
Delta	Sacramento-San Joaquin Delta
DMG	Deserts Managers Group
DOD	U.S. Department of Defense
DOI	U.S. Department of Interior
DOW	Defenders of Wildlife
DRECP	Desert Renewable Energy Conservation Plan
DSC	Delta Stewardship Council

DSP	Distinct Population Segment
DWR	California Department of Water Resources
EBM	Ecosystem Biodiversity Monitoring
EGPR	Environmental Goals and Policy Report
ELI	Environmental Law Institute
ELRT	Eagle Lake rainbow trout
ELRTCS	Eagle Lake Rainbow Trout Conservation Strategy
ENSO	El Niño-Southern Oscillation
EPA	U.S. Environmental Protection Agency
ERP	Ecosystem Restoration Program
ESA	Endangered Species Act
ESU	Evolutionarily Significant Unit
FGC	Fish and Game Code
FPR	Forest Practice Regulation
FRAP	Fire and Resource Assessment Program
FRGP	Fisheries Restoration Grants Program
FRPA	Fish Restoration Program Agreement
GIS	Geographic Information Systems
HCP	Habitat Conservation Plan
HCPB	Habitat Conservation Planning Branch
HUC	Hydrologic Unit Code
IEP	Interagency Ecological Program
IID	Imperial Irrigation District
INRMP	Integrated Natural Resource Management Plan
IPCC	Intergovernmental Panel on Climate Change
KEA	Key Ecological Attribute
LAE	Land Acquisition Evaluation
LCC	Landscape Conservation Cooperative
LED	Law Enforcement Division
LMP	Land Management Plan

Lower Colorado River Program	2005 Lower Colorado River Multi-Species Conservation Program
LSA	Lake and Streambed Alteration
MAST	Management, Analysis and Synthesis Team
MBTA	Migratory Bird Treaty Act
MCU	Marine Conservation Unit
MCS	Marijuana Cultivation Site
MLPA	Marine Life Protection Act
MMA	Marine Managed Area
MMBF	Million Board Feet
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSCP	Multiple Species Conservation Program
MSHCP	Multiple Species Habitat Conservation Plan
MSSC	Mammal Species of Special Concern
NASP	National Archery in the Schools Program
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NERRS	National Estuarine Research Reserve System
NGO	Non-Governmental Organization
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NPS	National Park Service
NRCS	National Resource Conservation Service
NZMS	New Zealand mud snails
OHV	Off-Highway Vehicle
OPC	California Ocean Protection Council
OPR	Governor's Office of Planning and Research
OSPR	Office of Spill Prevention and Response

OTD	Office of Training and Development
PDO	Pacific decadal oscillation
PLM	Private Lands Management
PORTS	Parks On-line Resources for Teachers and Students
PUC	Public Utilities Commission
QSA	Quantification Settlement Agreement
RAMP	Regional Advance Mitigation Planning
RCD	Resource Conservation District
RDM	Residual Dry Matter
REAT	Renewable Energy Action Team
ROW	Right-Of-Way
SCP	Scientific Collector's Permit
SGCN	Species of Greatest Conservation Need
SHA	Safe Harbor Agreement
SHARE	Shared Habitat Alliance for Recreational Enhancement
SI	CDFW's Science Institute
Sierra Framework	Sierra Nevada Framework for Conservation and Collaboration
SJRRP	San Joaquin River Restoration Program
SMART	Specific, Measurable, Attainable, Relevant, and Time-Bound
SMCA	State Marine Conservation Area
SMR	State Marine Reserve
SMRMA	State Marine Recreational Management Area
SNEP	Sierra Nevada Ecosystem Project
SNFPA	Sierra Nevada Forest Plan Amendment
SRWP	Sacramento River Watershed Program
SSC	Species of Special Concern
SVRA	State Vehicular Recreation Area
SWAP	State Wildlife Action Plan
SWG	State and Tribal Wildlife Grants
SWP	State Water Project

SWRCB	State Water Resources Control Board
TA	Technical Assistance
TAC	Technical Advisory Committee
TCP	Timberland Conservation Program
TMDL	Total maximum daily load
TNC	The Nature Conservancy
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UTS	Unarmored Threespine Stickleback
VegCAMP	Vegetation Classification and Mapping Program
WCB	Wildlife Conservation Board
WCGA	West Coast Governors Alliance
WET	Watershed Enforcement Team
WFL	Wildlife Forensic Laboratory
WIL	Wildlife Investigations Lab

Executive Summary

Congress created the State and Tribal Wildlife Grants (SWG) program in 2000, recognizing the need to fund programs for the conservation of wildlife diversity. Congress mandated each state and territory to develop by 2005 a State Wildlife Action Plan (SWAP) that provided a comprehensive wildlife conservation strategy to continue receiving federal funds through the SWG program. California's first SWAP was completed by California Department of Fish and Game (now the California Department of Fish and Wildlife [CDFW]) and approved by the U.S. Fish and Wildlife Service (USFWS) in 2005. California's SWAP 2005 identified and targeted Species of Greatest Conservation Need (SGCN) and the vital habitats on which they depend. CDFW has received approximately $37 million in federal support for the state's wildlife conservation activities through the SWG program from 2005 through 2014. The SWG program requires SWAP updates at least every 10 years. CDFW has now prepared SWAP 2015, which is the first comprehensive update of SWAP 2005.

Vision for Wildlife Conservation

In SWAP 2015, CDFW is focusing on conservation of the wildlife resources of the nation's most biologically diverse state using an approach that is in harmony with a growing human population and the need for resilience in the face of a changing climate. SWAP 2015 is a flexible, but scientifically grounded plan. Employing an ecosystem approach to conserve and manage diverse habitats and species, SWAP 2015 provides a blueprint for actions necessary to address highest priorities for conserving California's aquatic, marine, and terrestrial resources. Its implementation relies on making important and helpful conservation information more accessible to resource managers and the public, and on developing lasting partnerships with a broad array of governments, agencies, organizations, businesses, and citizens. CDFW's vision for conserving the state's wildlife is to sustain the floral and faunal biodiversity of California over the next decade, and to establish a solid conservation framework for the decades that follow. Through SWAP 2015, together with diverse partners, CDFW seeks to:

- maintain and enhance the integrity of ecosystems by conserving key natural processes and functions, habitat qualities, and sustainable native species population levels, so that California's ecosystems are resilient to shifting environmental conditions resulting from climate change;
- promote partnerships with federal, state, and local agencies; tribal governments; and non-governmental organizations with aligned conservation goals to leverage efficient use of funding and other public resources;
- inspire greater understanding and recognition of critical needs for conserving wildlife and their habitats by lawmakers, land use planners, private landowners, and others who have influence in developing and implementing conservation actions;

- allocate sufficient water and manage water resources to maintain healthy ecosystems and fish and wildlife populations when considering state and regional water supply needs;
- provide resources and coordinate efforts with partners to eradicate or control invasive species and to prevent new introductions;
- sustain the quality of California's natural resources and biodiversity in harmony with predicted economic growth and human population increases;
- continue to prioritize protection of key habitat linkages, sensitive habitats, and specialized habitats for SGCN;
- integrate wildlife conservation with working landscapes and environments, recognizing both the economic and ecological values of agriculture, rangeland, forestry, and fisheries;
- support conservation programs that benefit native species, habitats, and ecosystems through broad-based public funding from federal, state, special district, and local government sources;
- educate the public about wildlife conservation issues and inspire a conservation ethic in present and future generations through public outreach; and
- enhance conservation capacity by clearly articulating conservation purposes, applying adaptive management principles, and effectively using staff and financial resources.

Statewide Goals

Three statewide goals to enhance California ecosystems have been identified for SWAP. These overarching goals, with their associated sub-goals, represent the desired ecological outcomes for SWAP 2015 implementation.

Goal 1 - Abundance: Maintain and increase the extent of ecosystems and the distribution of native species while sustaining and enhancing species richness and abundance in California.

- *Goal 1.1 (Ecosystem Extent):* Maintain and increase the ecosystem extent.
- *Goal 1.2 (Species and Habitat Distribution):* Maintain and increase the distribution of native species and their habitats.
- *Goal 1.3 (Species Abundance and Richness):* Sustain and enhance the abundance of native species and species richness, including genetic diversity.
- *Goal 1.4 (Ecosystem Diversity):* Sustain and enhance ecosystem diversity.

Goal 2 - Enhance Ecosystem Conditions: Maintain and improve ecological conditions vital to ecosystem sustainability in California.

- *Goal 2.1 (Connectivity):* Maintain and improve connectivity vital to ecosystem sustainability (including vegetation, wildlife corridor, genetic permeability, water flow, lateral floodplain extent, and groundwater).

- *Goal 2.2 (Community Structure and Composition):* Maintain and improve community structure and composition vital to ecosystem sustainability (including those relevant to age class, habitat richness, structural heterogeneity, native species richness, and key species population level).
- *Goal 2.3 (Water Quantity and Availability):* Maintain and improve water quality (temperature, chemistry, pollutant and nutrient concentrations) vital to ecosystem sustainability, and improve the quantity and availability of water for ecosystems (including ocean, lakes, rivers, streams, groundwater, and snowpack).
- *Goal 2.4 (Soil Quality):* Maintain and improve soil quality vital to ecosystem sustainability (including soil moisture, chemistry, pollutant and nutrient concentrations and dynamics).

Goal 3 - Enhance Ecosystem Functions and Processes: Maintain and improve ecosystem functions and processes vital to ecosystem sustainability in California.

- *Goal 3.1 (Successional Dynamics):* Maintain or improve successional dynamics vital to ecosystem sustainability.
- *Goal 3.2 (Disturbance Regime):* Maintain or improve disturbance regimes vital to ecosystem sustainability (including fire regime, flooding regime, and grazing regime).
- *Goal 3.3 (Hydrological Regime):* Maintain or improve hydrological regimes vital to ecosystem sustainability (including fresh water hydrodynamics, oceanic circulation, and tidal patterns).
- *Goal 3.4 (Soil and Sediment Deposition Regime):* Maintain or improve soil and sediment deposition regimes vital to ecosystem sustainability (including hydro-geomorphic processes, wind-driven processes, and soil stability).

Ecosystem Approach

A multi-species, ecosystem approach has been used as the guiding framework for developing SWAP 2015. An ecosystem approach to conservation involves maintaining and enhancing the ecosystem processes, structure, and conditions, recognizing that all components are interrelated in a dynamically changing system. Large-scale landscape approaches are generally the most reliable and preferred method to conserve ecological integrity, including biological diversity. The approach benefits both game and non-game (or harvested and non-harvested) wildlife species, and creates many co-benefits related to both natural values (such as enhanced water quality, soil conservation, or resilience to the effects of climate change) and societal values (such as open space, scenic quality, or outdoor recreation opportunities).

Species of Greatest Conservation Need

A key element of updating the SWAP is identifying and compiling information on the species of wildlife that are indicative of the state's biological diversity and have the greatest need for conservation. These species are referred to as SGCN. For SWAP 2015, regional teams developed

criteria and evaluated species, resulting in a list of over 1,000 species of invertebrates, amphibians, reptiles, fish, birds, mammals, and plants that are considered SGCN. Because of the large number of species, a species-based implementation approach is not feasible; however, it is recognized that dividing California into habitat categories may present limitations that must be balanced with species-specific efforts when needed to effectively address conservation of species.

SWAP 2015 used three criteria to determine the list of SGCN:

- species listed at threatened, endangered, or candidate species in California under the federal Endangered Species Act or the California Endangered Species Act;
- species for which there is a conservation concern (generally equivalent to California Species of Special Concern); or
- species identified by CDFW as being highly vulnerable to climate change.

Consideration of Climate Change

Significant climate-related changes to California's environment have been documented in the last decade, including sea level rise, natural community shifts, increased prevalence of invasive species, increased number and intensity of wildfires, and prolonged drought (CNRA 2009, CNRA 2014). Climate-induced effects on wildlife, in combination with other pressures, have the potential to greatly diminish vulnerable wildlife populations and habitats and must be considered when developing management strategies. Climate change considerations have been given great weight during development of SWAP 2015, in the following ways:

- adopting climate vulnerability as a criterion for selecting SGCN;
- incorporating climate forecasts when assessing the ecological conditions of conservation targets;
- conducting climate change vulnerability analyses for native species and vegetation in California; and
- identifying how the SWAP conservation strategies align with California's Climate Change Adaptation Strategy and the National Fish, Wildlife, and Plants Climate Adaptation Strategy, thus achieving important climate adaptation co-benefits through SWAP implementation.

Prioritizing Conservation Targets

The process to provide the SWAP elements required by USFWS and develop multi-species conservation strategies began by broadly categorizing natural resources in California. The categories used in SWAP 2015 are terrestrial, freshwater aquatic, and marine habitats. SWAP 2015 recognizes that within each of these resource categories, there are strategies that apply to specific geographic regions, and others that are more broadly relevant across many regions or possibly statewide. To assess conservation needs at a manageable scale, the state was

subdivided for each resource category using established and accepted geographic units. These geographic units are ecoregions (adopting "sections" identified under the U.S. Forest Service Ecoregion Classification) for terrestrial resources, hydrologic units (adopting the four digit hydrologic unit codes identified by the U.S. Geologic Survey) for freshwater aquatic resources, and marine conservation units (adopting marine study regions identified under the Marine Life Protection Act [Fish and Game Code Section 2850-2863]), collectively called conservation units. The conservation units were then grouped together into seven major geographic provinces. This approach facilitated the discussion of ecosystems, natural communities and species at a scale appropriate for regional conservation planning. The seven provinces are:

- North Coast and Klamath
- Cascades and Modoc Plateau
- Central Valley and Sierra Nevada
- Bay Delta and Central Coast
- South Coast
- Deserts
- Marine

An exception to developing conservation strategies within these geographic scales is the analysis for anadromous fish. Anadromous fish begin life in the fresh water of rivers and streams, migrate to the ocean to grow into adults, and then return to fresh water to spawn. Most anadromous fish spend the majority of their life in marine environments and travel great distances to reach their spawning rivers or streams. Because the geographic ranges of anadromous fish span many of the provinces developed for SWAP 2015, the organization of conservation strategies by hydrologic unit or even province does not adequately address their conservation needs. As such, the geographic organization of conservation strategies for anadromous fish has been developed separately to capture all the habitats within their ranges.

For each conservation unit in California, SWAP 2015 developed at least one conservation project, consisting of a set of conservation strategies to improve conditions of a conservation target. The focus of SWAP 2015 is on species deemed to be most rare, imperiled, and in need of conservation. Habitat types with high levels of species richness, high counts of rare and endemic species, and high counts of vulnerable species (including declining and at-risk species and SGCNs), are prioritized for selection as potential terrestrial conservation targets. Expert opinion and knowledge were employed to identify the highest priority freshwater aquatic targets for each hydrologic unit. Marine ecosystem targets were based on priorities identified through work recently completed as part of the Marine Life Protection Act (MLPA). Anadromous fish conservation targets are key species, species guilds, habitat types, or ecological processes essential to the future conservation of anadromous species and were prioritized by CDFW to adequately encapsulate their evolutionary and ecological significance.

Development of Conservation Strategies

Statewide conservation strategies have been developed in SWAP 2015 for terrestrial, freshwater aquatic, and marine resources in the following categories:

- Data Collection and Analysis
- Partner Engagement
- Management Planning
- Direct Management
- Economic Incentives
- Environmental Review
- Land Acquisition, Easement, and Lease
- Land Use Planning
- Law and Policy
- Outreach and Education
- Training and Technical Assistance

Specific conservation strategies were developed as part of a conservation project for each conservation target using a systematic approach. First, for each conservation target, key ecological attributes (KEAs) were identified. These attributes are the ecological qualities on which the ecological viability of the conservation target most depends. Stresses, the degraded conditions of ecological attributes, were then identified followed by the identification of pressures that are the sources of degradation of ecological attributes. If applicable, underlying socio-economic causes for the pressures were also recognized. After illustrating the interrelationship of KEAs, stresses and pressures, conservation strategies were developed to either directly or indirectly alleviate negative impacts of pressures or stresses, or to improve or maintain the ecological viability of conservation targets by conserving KEAs. The conservation targets, stresses, pressures, and conservation strategies for each province are summarized in Tables 1-7. (See below, following "Conclusion" section.)

Conservation strategies for anadromous fish are summarized in Table 8 and consist of the following general strategies:

- Research, Assessment, and Monitoring;
- Securing Adequate Funding;
- Habitat Enhancement, Restoration, and Protection; and
- Developing Water Management Plans.

Integration and Implementation of SWAP 2015

Implementation of California's SWAP 2015 will involve integrating SWAP features into other resource management programs and plans led by CDFW or partners, developing more detailed SWAP implementation plans, systematically pursuing resources necessary for implementation of conservation strategies, effectively coordinating and collaborating with CDFW partners, and adaptively responding to emerging issues.

Because of California's tremendous biodiversity and the broad spectrum of actions needed to implement conservation strategies across a complex assemblage of resources, land uses, government activities, and resource-consumptive industries, CDFW determined that a more detailed coordination framework for SWAP 2015 implementation was needed beyond the presentation in SWAP 2015. Called "companion plans," these sector-specific action plans will be instrumental in the implementation of SWAP 2015. CDFW, in partnership with other state and federal agencies and organizations involved in the use, management, and conservation of California's natural resources and cultural heritage, are creating nine sector-specific plans.

Sector-Specific Companion Plans:

- **Agriculture**
- **Consumptive and Recreational Uses**
- **Energy Development**
- **Forests and Rangelands**
- **Land Use Planning**
- **Transportation Planning**
- **Tribal Lands**
- **Water Management**
- **Marine Resources**

Companion plans will support development of well-coordinated, collaborative, multi-stakeholder efforts that leverage human and financial resources, as well as increase efficiencies for implementation of strategies, to achieve goals and objectives described in SWAP 2015. These plans will identify shared priorities of SWAP 2015 and CDFW partners, and mutually strengthen the conservation capabilities of CDFW and participating organizations.

Adaptive Management and Monitoring

Natural communities, ecosystems, species population dynamics, and the effects of pressures or conservation actions on the environment are inherently complex. Resource managers often need to take action to conserve species even though scientific information may be incomplete and outcomes of the actions may be uncertain. Adaptive management is essential to implementing effective conservation programs in light of these challenges. Adaptive management of a conservation plan is a process to continually monitor to assess the environment, as well as the effects and effectiveness of conservation strategies, and to adjust the plan when improvement is needed to achieve the desired outcomes. SWAP 2015 has integrated the concept of adaptive management in its preparation and implementation.

For SWAP 2015, CDFW has adopted a framework of effectiveness measures that is consistent with the *Open Standards for the Practice of Conservation* (www.conservationmeasures.org) and that has been proposed by the Association of Fish and Wildlife Agencies (AFWA) (2011). This framework establishes a standardized and readily accessible monitoring and evaluation process to inform and guide SWAP implementation. Under the effectiveness measure framework, the information gathered through monitoring and evaluation can be used to identify successful strategies that should be continued and shared, and also to identify less effective ones that should be improved or abandoned. The effectiveness measure framework also provides a

mechanism for CDFW to report on the status of SWAP implementation to USFWS, conservation partners and the public.

SWAP 2015 employs three types of monitoring: (1) status monitoring, which tracks conditions of species, ecosystems and other conservation factors over time; (2) effectiveness monitoring, which determines if conservation strategies are having their intended results and to identify ways to improve actions that are less effective (i.e., adaptive management); and (3) effect monitoring, addressing whether and how the target conditions are being influenced by the implementation of strategies. The effectiveness measure framework promoted by AFWA and adopted for SWAP 2015 brings these three types of monitoring together to (1) attribute changes in ecosystems and species status to the effectiveness of SWAP conservation strategies, and (2) roll up the results of many different strategies into statewide reports.

Conclusion

California's SWAP 2015 establishes a strategic vision of the integrated conservation efforts needed to sustain the tremendous diversity of wildlife resources found in the state. Although SWAP 2015 is not a specific work plan for CDFW or any other organization, it is meant to visualize, support, complement, and unite the plans of the multiple conservation and management entities within California. More detailed, operation-level plans will be needed to complete many of the strategies identified in SWAP 2015. Such plans should be developed by the appropriate entities whose interest, authority, or responsibility encompass each action and in coordination with the SWAP and its companion plans. Support provided by the SWG program will enable coordination and implementation of many projects identified under the SWAP.

SWAP 2015 is an adaptive plan that will continually be updated, revised, and improved, based on the input and deliberations of all those involved in wildlife conservation. Working together, Californians can shape a future with abundant wildlife, outstanding biodiversity, and healthy ecosystems that define the state and provide for the inspiration, recreation, sustenance, and livelihood of its residents and visitors for current and coming generations.

Table 1 Conservation Targets and Strategies for the North Coast and Klamath Province

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
American Southwest Riparian Forest and Woodland North Coastal and Montane Riparian Forest and Woodland	Northern California Coast Ranges: - By 2025, acres of habitat are increased by at least 5% from 2015 acres. - By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. - By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. - By 2025, acres/miles with desired channel pattern are increased by at least 5% from 2015 acres/miles. - By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. Northern California Coast: - By 2025, acres of habitat (riparian) are increased at least 5% from 2015 acres. - By 2025, acres with desired endemic plant diversity (ground cover, shrubs, understory) are increased at least 5% from 2015 acres. - By 2025, acres with native species dominant are increased by at least 5% from 2015 acres. - By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. - By 2025, acres/miles with desired channel pattern (natural floodplain) are increased by at least 5% from 2015 acres/miles. - By 2025, miles connected (to natural floodplain) are increased by at least 5% from 2015 miles. - By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. - By 2025, acres/miles with natural hydrologic regime (through management of water operations in the Eel, Klamath, Trinity, Mad, and Russian Rivers) has increased by at least 5% from 2015 acres/miles.	- Area and extent of community - Connectivity among communities and ecosystems - Successional dynamics - Age class heterogeneity - Hydrological regime	- Annual and perennial non-timber crops - Dams and water management/use - Invasive plants/animals - Housing and urban areas - Livestock farming and ranching	- Partner Engagement - Management Planning - Direct Management - Land Acquisition/ Easement/ Lease - Law and Policy - Outreach and Education
Freshwater Marsh	- By 2025, acres of freshwater emergent wetland habitat acre increased by at least 5% from 2015 acres. - By 2025, miles of freshwater emergent wetland with native species dominant are increased by at least 5% from 2015 miles. - By 2025, population abundance of key species (SGCN) is increased by at least 5% from 2015 population levels. - By 2025, acres/miles of freshwater emergent wetland with desired inches of groundwater are increased by at least 5% from 2015. - By 2025, acres of freshwater emergent wetland with suitable soil characteristics are increased by 5% from 2015 acres. - By 2015, population of key species (beaver) is increased by at least 5% from 2015 population levels. - By 2025, acres of freshwater emergent wetland with desired stages of succession are increased by at least 5% from 2015 acres. - By 2025, acres/miles with desired channel pattern (connected floodplains) are increased by at least 5% from 2015 acres/miles. - By 2025, miles with desired level of discharge (mimicking natural flood frequency, seasonality, and magnitude) are increased by at least 5% from 2015 miles.	- Area and extent of community - Connectivity among communities and ecosystems - Successional dynamics - Key species population levels - Surface water flow regime	- Annual and perennial non-timber crops - Housing and urban areas - Invasive plants/animals - Livestock farming and ranching - Other ecosystem modifications	- Management Planning - Economic Incentives - Land Acquisition/ Easement/ Lease - Law and Policy - Outreach and Education
Pacific Northwest Conifer Forests	- By 2025, acres of redwood habitat are increased by at least 5% from 2015 acres. - By 2025, acres with desired structural diversity (multi-story canopy) are increased by at least 5% from 2015 acres. - By 2025, acres/miles with natural hydrologic (udic) regime are increased by at least 5% from 2015 acres/miles. - By 2025, acres with suitable soil characteristics (in wet meadows) are increased by at least 5% from 2015 acres. - By 2025, acres with desired (late) stages of succession are increased by at least 5% from 2015 acres.	- Area and extent of community - Successional dynamics - Structural diversity - Hydrological regime - Soil and sediment deposition regime	- Agricultural and forestry effluents - Avalanches - Fire and fire suppression - Introduced genetic material - Invasive plants/animals - Livestock farming and ranching - Logging and wood harvesting - Parasites/pathogens/diseases - Roads and railroads - Wood and pulp plantations	- Data Collection and Analysis - Partner Engagement - Management Planning - Direct Management - Outreach and Education - Training and Technical Assistance

Table 1 Conservation Targets and Strategies for the North Coast and Klamath Province (continued)

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
Pacific Northwest Subalpine Forest	▪ By 2025, acres of habitat are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres.	▪ Area and extent of community ▪ Fire regime ▪ Successional dynamics ▪ Structural diversity ▪ Age class heterogeneity	▪ Climate change ▪ Fire and fire suppression ▪ Parasites/pathogens/diseases ▪ Recreational activities	▪ Data Collection and Analysis ▪ Partner Engagement ▪ Management Planning ▪ Direct Management ▪ Economic Incentives ▪ Environmental Review ▪ Land Use Planning ▪ Training and Technical Assistance
California Foothill and Valley Forests and Woodlands	▪ By 2025, acres with desired endemic plant diversity are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired structural diversity (oak recruitment) are increased by at least 5% from 2015 acres. ▪ By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. ▪ By 2025, acres/miles with desired inches of groundwater are increased by at least 5% from 2015 acres/miles.	▪ Fire regime ▪ Successional dynamics ▪ Key species population levels ▪ Native versus non-native diversity ▪ Age class heterogeneity ▪ Soil and sediment deposition regime	▪ Fire and fire suppression ▪ Invasive plants/animals ▪ Livestock farming and ranching ▪ Recreational activities	▪ Partner Engagement ▪ Direct Management ▪ Economic Incentives ▪ Land Acquisition/ Easement/ Lease ▪ Outreach and Education
Alpine Vegetation	▪ By 2025, acres connected are maintained within the ecoregion from 2015 acres. ▪ By 2025, acres of macrogroup (target) are maintained within the ecoregion from 2015 acres. ▪ By 2025, acres with desired plant diversity (species richness and subgroup/alliance diversity) are maintained within the ecoregion from 2015 acres.	▪ Area and extent of community ▪ Connectivity among communities and ecosystems ▪ Diversity	▪ Climate Change ▪ Commercial and industrial areas ▪ Invasive plants/animals ▪ Livestock farming and ranching ▪ Recreational activities	▪ Data Collection and Analysis ▪ Partner Engagement ▪ Management Planning ▪ Direct Management ▪ Economic Incentives ▪ Outreach and Education ▪ Training and Technical Assistance
Fen (Peatlands) North Coastal and Montane Riparian Forest and Woodland Subalpine Aspen Forests and Pine Woodlands Western Upland Grasslands, Wet Mountain Meadow	▪ By 2025, acres of habitat are increased by at least 5% from 2015 acres. ▪ By 2025, acres with native species dominant are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. ▪ By 2025, acres/miles with desired channel pattern are increased by at least 5% from 2015 acres/miles. ▪ By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres.	▪ Area and extent of community ▪ Fire regime ▪ Successional dynamics ▪ Native versus non-native diversity ▪ Hydrological regime	▪ Fire and fire suppression ▪ Invasive plants/animals ▪ Logging and wood harvesting	▪ Data Collection and Analysis ▪ Partner Engagement ▪ Direct Management ▪ Environmental Review ▪ Law and Policy ▪ Outreach and Education
Subalpine Aspen Forests and Pine Woodlands	▪ By 2025, acres of habitat are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. ▪ By 2025, acres connected are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres.	▪ Area and extent of community ▪ Fire regime ▪ Connectivity among communities and ecosystems ▪ Successional dynamics ▪ Age class heterogeneity ▪ Soil and sediment deposition regime	▪ Fire and fire suppression ▪ Logging and wood harvesting ▪ Parasites/pathogens/diseases	▪ Data Collection and Analysis ▪ Partner Engagement ▪ Direct Management ▪ Environmental Review ▪ Law and Policy ▪ Outreach and Education

Table 1 Conservation Targets and Strategies for the North Coast and Klamath Province (continued)

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
Montane Upland Deciduous Scrub	▪ By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. ▪ By 2025, connected montane shrubland and grassland acres are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. ▪ By 2025, acres with suitable soil characteristics are increased by 5% from 2015 acres. ▪ By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres.	▪ Fire regime ▪ Connectivity among communities and ecosystems ▪ Successional dynamics ▪ Age class heterogeneity	▪ Housing and urban areas ▪ Logging and wood harvesting ▪ Fire and fire suppression	▪ Data Collection and Analysis ▪ Partner Engagement ▪ Direct Management ▪ Environmental Review ▪ Law and Policy ▪ Outreach and Education
Native Aquatic Species Assemblages/Communities	▪ By 2025, miles of streams with target amphibian population are increased by at least 5% from 2015 miles. ▪ By 2025, miles of streams with target fish population are increased by at least 5% from 2015 miles. ▪ By 2025, population of key species are increased by at least 5% from 2015 population. ▪ By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. ▪ By 2025, acres/miles with desired concentrations of pollutants are increased by at least 5% from 2015 acres/miles. ▪ By 2025, acres/miles with total dissolved solids are decreased by at least 5% from 2015 acres. ▪ By 2025, miles with desired stream stage (flow) are increased by at least 5% from 2015 miles. ▪ By 2025, acres/miles with desired temperature are increased by at least 5% from 2015 acres/miles.	▪ Area and extent of community ▪ Key species population levels ▪ Native versus non-native diversity ▪ Soil and sediment deposition regime ▪ Surface water flow regime ▪ Water temperatures and chemistry ▪ Pollutant concentrations and dynamics	▪ Agricultural and forestry effluents ▪ Annual and perennial non-timber crops ▪ Dams and water management/use ▪ Fire and fire suppression ▪ Garbage and solid waste ▪ Household sewage and urban waste water ▪ Housing and urban areas ▪ Fishing and harvesting aquatic resources ▪ Livestock farming and ranching ▪ Industrial and military effluents ▪ Introduced genetic material ▪ Invasive plants/animals ▪ Logging and wood harvesting ▪ Marine and freshwater aquaculture ▪ Mining and quarrying ▪ Parasites/pathogens/diseases ▪ Renewable energy ▪ Roads and railroads	▪ Direct Management ▪ Economic Incentives ▪ Land Acquisition/ Easement/ Lease ▪ Law and Policy ▪ Outreach and Education

[1] Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 2 Conservation Targets and Strategies for the Cascades and Modoc Plateau Province

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
North Coastal Mixed Evergreen and Montane Forests	By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, miles with desired level of water yield are increased by at least 5 % from 2015 miles.	Fire regime Successional dynamics Native versus non-native diversity Age class heterogeneity Hydrological regime	Fire and fire suppression Livestock farming and ranching Logging and wood harvesting Renewable energy Utility and service lines	Data Collection and Analysis Management Planning Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Western Upland Grasslands	By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity (remove in-growth trees from within grassland habitats) are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres.	Area and extent of community Fire regime Successional dynamics Native versus non-native diversity	Annual and perennial non-timber crops Fire and fire suppression Invasive plants/animals Livestock farming and ranching Logging and wood harvesting	Data Collection and Analysis Direct Management Economic Incentives Land Acquisition/ Easement/ Lease Land Use Planning Law and Policy
Big Sagebrush Scrub Great Basin Dwarf Sagebrush Scrub Great Basin Upland Scrub	By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres with suitable soil characteristics are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres.	Area and extent of community Fire regime Successional dynamics Native versus non-native diversity Soil and sediment deposition regime	Annual and perennial non-timber crops Dams and water management/use Fire and fire suppression Housing and urban areas Invasive plants/animals Livestock farming and ranching Parasites/pathogens/diseases Recreational activities Renewable energy Utility and service lines	Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Law and Policy Outreach and Education
Great Basin Pinyon-Juniper Woodland	By 2025, acres with desired native species dominance and desired structural diversity are increased by at least 5% within the presettlement range of pinyon-juniper and juniper habitats in the ecoregion. By 2025, acres of desired successional stage are increased by at least 5% from presettlement habitat acreage. By 2025, acres with desired fire return interval are increased by at least 5% from 2015 levels.	Fire regime Successional dynamics Structural diversity Native versus non-native diversity	Climate change Fire and fire suppression Invasive plants/animals Livestock farming and ranching Other ecosystem modifications	Data Collection and Analysis Partner Engagement Direct Management
Eagle Lake Native Fish Assemblage	By 2025, miles of streams with target fish population (Eagle Lake Rainbow Trout - ELRT) are increased by at least 5% from 2015 miles. By 2025, miles of river with native species dominant are increased by at least 5% from 2015 miles. By 2025, population of key species (ELRT) are increased by at least 5% from the 2015 population size. By 2025, acres with desired genetic connectivity between lower Pine Creek and lake populations during spawning and migration period are increased by at least 5% from 2015 acres. By 2025, miles connected are increased by at least 5% from 2015 miles.	Area and extent of community Connectivity among communities and ecosystems Key species population levels Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water level fluctuations	Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Logging and wood harvesting Roads and railroads	Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Law and Policy Outreach and Education
Goose Lake Native Fish Assemblage	By 2025, acres connected are increased by at least 5% from 2015 acres by improving access to habitat in all lake tributaries and enhancing fish passage. By 2025, populations of key species are increased by at least 5% from 2015 population size. By 2025, miles of river in Pine and Davis Creeks with native species dominant are increased by at least 5% from 2015 miles. By 2025, miles connected between stream and lake populations during spawning and migration period are increased by at least 5% from 2015 miles.	Area and extent of community Connectivity among communities and ecosystems Key species population levels Endemic diversity Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water temperatures and chemistry Water level fluctuations Nutrient concentration and dynamics	Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Logging and wood harvesting Roads and railroads	Data Collection and Analysis Direct Management Law and Policy Outreach and Education

[1] Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 3 Conservation Targets and Strategies for the Bay Delta and Central Coast Province

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
American Southwest Riparian Forest and Woodland	By 2025, acres of habitat are increased by at least 5% from 2015 acres of riparian habitat in the Central Coast Ecoregion. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, miles connected are increased by at least 5% from 2015 miles of riparian habitat. By 2025, miles with desired level of discharge are increased by at least 5% from 2015 miles. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres of riparian habitat.	Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Age class heterogeneity Water level fluctuations	Annual and perennial non-timber crops Dams and water management/use Invasive plants/animals Livestock farming and ranching Roads and railroads	Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
California Grassland, Vernal Pools, and Flowerfields	By 2025, acres of grassland habitat restored are increased by at least 5% from 2015 acres. By 2025, acres of vernal pool habitat restored are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres by treatment with managed grazing. By 2025, population of key species (spadefoot toad) is increased by at least 5% from 2015 population levels. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres by reducing encroachment of coyote bush/coastal scrub into grassland. By 2025, miles with desired stream stage are increased by at least 5% from 2015 miles through length of hydroperiod. By 2025, miles with desired level water quality are increased by at least 5% from 2015 miles by meeting standards of Basin Plan.	Area and extent of community Successional dynamics Key species population levels Native versus non-native diversity Surface water flow regime	Annual and perennial non-timber crops Commercial and industrial areas Fire and fire suppression Housing and urban areas Invasive plants/animals Livestock farming and ranching Renewable energy Roads and railroads	Data Collection and Analysis Partner Engagement Direct Management Land Acquisition/ Easement/ Lease Land Use Planning
Coastal Sage Scrub Northwest Coast Cliff and Outcrop Coastal Dune and Bluff Scrub North Coast Deciduous Scrub and Terrace Prairie	By 2025, acres with desired structural diversity are increased at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres with suitable soil characteristics are increased by 5% from 2015 acres. By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres.	Area and extent of community Fire regime Connectivity among communities and ecosystems Structural diversity Native versus non-native diversity Soil and sediment deposition regime	Air-borne pollutants Annual and perennial non-timber crops Climate change Commercial and industrial areas Fire and fire suppression Housing and urban areas Invasive plants/animals Roads and railroads Tourism and recreation areas	Data Collection and Analysis Partner Engagement Management Planning Direct Management Environmental Review Land Acquisition/ Easement/ Lease Land Use Planning Law and Policy
Coastal Lagoons	By 2025, area (miles/acres) with desired nutrient load (TMDL) are increased by at least 5% from 2015 area (miles/acres). By 2025, acres of lagoon habitat are increased by at least 5% from 2015 acres. By 2025, acres of connected lagoon habitat are increased by at least 5% from 2015 acres. By 2025, miles with desired level of discharge (water level) are increased by at least 5% from 2015 miles.	Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Surface water flow regime Nutrient concentrations and dynamics	Agricultural and forestry effluents Annual and perennial non-timber crops Climate change Commercial and industrial areas Dams and water management/use Fire and fire suppression Garbage and solid waste Housing and urban areas Housing sewage and urban waste water Livestock farming and ranching Other ecosystem modifications Recreational activities Roads and railroads Tourism and recreation areas Wood and pulp plantations	Data Collection and Analysis Direct Management Land Acquisition/ Easement/ Lease Law and Policy Training and Technical Assistance
Salt Marsh	By 2025, miles with desired level of water quality are increased by at least 5% from 2015 miles. By 2025, acres of habitat (salt-marsh habitat) are increased by at least 5% from 2015 acres. By 2025, acres with desired genetic connectivity are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres of habitat (salt-marsh habitat by providing high-tide refugia for sensitive species) are increased by at least 5% from 2015 acres. By 2025, miles with desired level of water yield (consistent with the Bay-Delta Water Quality Control Plan requirements) are increased by at least 5% from 2015 miles. By 2025, improve water quality in the San Francisco Bay Delta by meeting Total Maximum Daily Load requirements for organic and inorganic pollutants. By 2025, miles with desired level water quality are increased by at least 5% from 2015 miles.	Area and extent of community Successional dynamics Structural diversity Diversity Native versus non-native diversity Soil and sediment deposition regime Pollutant concentrations and dynamics Water level fluctuations	Annual and perennial non-timber crops Commercial and industrial areas Dams and water management/use Fishing and harvesting aquatic resources Housing and urban areas Hunting and collecting terrestrial animals Invasive plants/animals Livestock farming and ranching Recreational activities Roads and railroads Shipping lanes	Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education

[1] Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 4 Conservation Targets and Strategies for Central Valley and Sierra Nevada Province

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
American Southwest Riparian Forest and Woodland	By 2025, acres of functional riparian habitat are increased by at least 5% from 2015 acres. By 2025, acres connected riparian habitat are increased by at least 5% from 2015 acres. By 2025, acres/miles with natural hydrologic regime have increased by at least 5% from 2015 acres/miles. By 2025, acres/miles with total dissolved solids (meeting TMDL) are decreased by at least 5% from 2015 acres.	Area and extent of community Connectivity among communities and ecosystems Hydrological regime Soil and sediment deposition regime Surface water flow	Annual and perennial non-timber crops Dams and water management/use Housing and urban areas Invasive plants/animals Livestock farming and ranching Recreational activities Roads and railroads Utility and service lines	Data Collection and Analysis Management Planning Direct Management Outreach and Education Land Acquisition/ Easement/ Lease Law and Policy
Chaparral Desert Transition Chaparral Montane Chaparral California Foothill and Coastal Rock Outcrop Vegetation	By 2025, acres of macrogroup habitat (target) are maintained or increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant is increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired connectivity are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres.	Area and extent of community Fire regime Connectivity among communities and ecosystems Successional dynamics Structural diversity Native versus non-native species	Annual and perennial non-timber crops Climate change Fire and fire suppression Housing and urban areas Invasive plants/animals Renewable energy	Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Acquisition/ Easement/ Lease
California Foothill and Valley Forests and Woodlands	By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, populations of key species (oaks) are increased by at least 5% from 2015 population. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, miles with desired level of water yield are increased by at least 5% from 2015 miles.	Fire regime Successional dynamics Key species population levels Native versus non-native species Age class heterogeneity Soil and sediment deposition regime	Fire and fire suppression Invasive plants/animals Livestock farming and ranching Recreational activities	Direct Management Partner Engagement Economic Incentives Land Acquisition/ Easement/ Lease Outreach and Education
North Coastal Mixed Evergreen and Montane Conifer Forests	By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity (increase rotation age) are increased by at least 5% from 2015 acres. By 2025, acres of habitat (with increased recruitment of oaks, aspen, and shrubs) are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired water yield are increased by at least 5% from 2015 acres/miles.	Fire regime Successional dynamics Native versus non-native species Age class heterogeneity Hydrological regime	Fire and fire suppression Livestock farming and ranching Logging and wood harvesting Renewable energy Utility and service lines	Data Collection and Analysis Management Planning Land Acquisition/ Easement/ Lease Law and Policy Outreach and Education
Alpine Vegetation	By 2025, acres connected are maintained within the ecoregion from 2015 acres. By 2025, acres of macrogroup (target) are maintained within the ecoregion from 2015 acres. By 2025, acres with desired plant diversity (species richness and subgroup/alliance diversity) are maintained within the ecoregion from 2015 acres.	Area and extent of community Connectivity among communities and ecosystems Diversity	Climate change Commercial and industrial areas Invasive plants/animals Livestock farming and ranching Recreational activities	Data Collection and Analysis Partner Engagement Management Planning Direct Management Outreach and Education Training and Technical Assistance
Pacific Northwest Subalpine Forest	By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres.	Area and extent of community Fire regime Successional dynamics Structural diversity Age class heterogeneity	Climate change Fire and fire suppression Parasites/pathogens/diseases Recreational activities	Data Collection and Analysis Partner Engagement Management Planning Direct Management Economic Incentives Environmental Review Land Use Planning Training and Technical Assistance

Table 4 Conservation Targets and Strategies for Central Valley and Sierra Nevada Province (continued)

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
Fen (Peatlands)	▪ By 2025, acres of habitat (meadows) are increased by at least 5% from 2015 acres. ▪ By 2025, populations of key species (hydrophilic vegetation for SGCNs) are increased by at least 5% from 2015 population. ▪ By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. ▪ By 2025, acres/miles with a natural hydrologic regime have increased by at least 5% from acres/miles. ▪ By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. ▪ By 2025, acres with suitable soil characteristics (reduced sediment input) are increased by at least 5% from 2015 acres. ▪ By 2025, miles with desired level of discharge are increased by at least 5% from 2015 miles.	▪ Area and extent of community ▪ Fire regime ▪ Connectivity among communities and ecosystems ▪ Key species population levels ▪ Endemic diversity ▪ Soil and sediment deposition regime ▪ Water level fluctuations	▪ Agricultural and forestry effluents ▪ Annual and perennial non-timber crops ▪ Dams and water management/use ▪ Fire and fire suppression ▪ Housing and urban areas ▪ Hunting and collection of terrestrial animals ▪ Industrial and military effluents ▪ Invasive plants/animals ▪ Livestock farming and ranching ▪ Logging and wood harvesting ▪ Mining and quarrying ▪ Parasites/pathogens/diseases ▪ Recreational activities ▪ Roads and railroads ▪ Tourism and recreation areas	▪ Data Collection and Analysis ▪ Management Planning ▪ Direct Management ▪ Land Acquisition/ Easement/ Lease ▪ Outreach and Education
Clear Lake Native Fish Assemblage	▪ By 2025, acres of habitat (wetland) are increased by at least 5% from 2015 acres. ▪ By 2025, acres of habitat (riparian) are increased by at least 5% from 2015 acres. ▪ By 2025, populations of key species (tule perch, prickly sculpin, and Clear Lake hitch) are increased by at least 5% from 2015 population. ▪ By 2025, miles of river with native species dominant are increased by at least 5% from 2015 miles. ▪ By 2025, water flow of Adobe, Scotts, Middle, Kelsey, Cole creeks in Lake County are increased by at least 5% during spring and early summer season so that native fish species could better migrate in these creeks. ▪ By 2025, miles with desired stream stage (in Adobe, Scotts, Middle, Kelsey, Cole creeks in Lake Co. during spring and early summer season) are increased by at least 5% from 2015 miles. ▪ By 2025, miles with desired level water quality are increased by at least 5% from 2015 miles. ▪ By 2025, acres/miles with desired channel pattern are increased by at least 5% from 2015 acres/miles.	▪ Area and extent of community ▪ Connectivity among communities and ecosystems ▪ Key species population levels ▪ Structural diversity ▪ Diversity ▪ Native versus non-native species ▪ Endemic diversity ▪ Soil and sediment deposition regime ▪ Surface water flow regime ▪ Pollutant concentration and dynamics ▪ Nutrient concentrations and dynamics	▪ Annual and perennial non-timber crops ▪ Dams and water management/use ▪ Invasive plants/animals ▪ Mining and quarrying ▪ Recreational activities	▪ Partner Engagement ▪ Direct Management ▪ Economic Incentives ▪ Land Acquisition/ Easement/ Lease ▪ Law and Policy ▪ Outreach and Education
Goose Lake Native Fish Assemblage	▪ By 2025, acres connected are increased by improving access to habitat in all lake tributaries, by at least 5% from 2015 acres. ▪ By 2025, populations of key species are increased, by at least 5% from 2015 population. ▪ By 2025, miles of river in Pine and Davis Creeks with native species dominant are increased by at least 5% from 2015 miles. ▪ By 2025, miles connected between stream and lake populations during spawning and migration period are increased by at least 5% from 2015 miles.	▪ Area and extent of community ▪ Connectivity among communities and ecosystems ▪ Key species population levels ▪ Native versus non-native species ▪ Endemic diversity ▪ Soil and sediment deposition regime ▪ Surface water flow regime ▪ Water temperature and chemistry ▪ Nutrient concentrations and dynamics ▪ Water level fluctuations	▪ Dams and water management/use ▪ Introduced genetic material ▪ Invasive plants/animals ▪ Livestock farming and ranching ▪ Logging and wood harvesting ▪ Roads and railroads	▪ Direct Management ▪ Law and Policy ▪ Outreach and Education
Carson River Native Fish Assemblage	▪ By 2025, miles of streams with target fish population are increased by at least 5% from 2015 miles in the Carson River basin. ▪ By 2025, miles with desired age class heterogeneity are increased by at least 5% from 2015 acres. ▪ By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. ▪ By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. ▪ By 2025, acres/miles with desired concentrations of pollutants are increased by at least 5% from 2015 acres/miles (consistent with TMDL). ▪ By 2025, acres/miles with total dissolved solids are decreased by at least 5% from 2015 acres. ▪ By 2025, miles with desired stream stage are increased by at least 5% from 2015 miles.	▪ Area and extent of community ▪ Fire regime ▪ Native versus non-native species ▪ Age class heterogeneity ▪ Soil and sediment deposition regime ▪ Surface water flow regime ▪ Pollutant concentration and dynamics	▪ Dams and water management/use ▪ Fishing and harvesting aquatic resources ▪ Housing and urban areas ▪ Introduced genetic material ▪ Invasive plants/animals	▪ Data Collection and Analysis ▪ Management Planning ▪ Direct Management ▪ Land Acquisition/ Easement/ Lease ▪ Law and Policy ▪ Outreach and Education ▪ Training and Technical Assistance

Table 4 Conservation Targets and Strategies for Central Valley and Sierra Nevada Province (continued)

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
Walker River Native Fish Assemblage	By 2025, miles of streams with target fish population (SGCNs) are increased by at least 5% from 2015 miles. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, miles connected (i.e., past barriers) are increased by at least 5% from 2015 miles. By 2025, miles with desired stream stage (mimics natural hydrograph) are increased by at least 5% from 2015 miles. By 2025, miles with desired level of water quality (meeting TMDL standards) are increased by at least 5% from 2015 miles. By 2025, miles with desired age class heterogeneity are increased by at least 5% from 2015 acres.	Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water quality	Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Roads and railroads	Data Collection and Analysis Partner Engagement Management Planning Direct Management Law and Policy Outreach and Education
San Joaquin Native Fish Assemblage	By 2025, miles connected native fish habitat are increased by at least 5% from 2015 miles. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, miles with desired level of water yield (flow) are increased by at least 5% from 2015 miles. By 2025, miles of streams with target fish population are increased by at least 5% from 2015 miles. By 2025, acres/miles of native fish habitat with desired temperature are increased by at least 5% from 2015 acres/miles.	Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Surface water flow regime Water temperature and chemistry	Annual and perennial non-timber crops Dams and water management/use Household sewage and urban waste water Housing and urban development Invasive plants/animals Marine and freshwater aquaculture Recreational activities	Data Collection and Analysis Management Planning Direct Management Law and Policy Outreach and Education
Upper Kern River Native Fish Assemblage	By 2025, miles of streams with target fish population are increased by at least 5% from 2015 miles. By 2025, miles with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired concentrations of pollutants are increased by at least 5% from 2015 acres/miles (consistent with TMDL). By 2025, acres/miles with total dissolved solids are decreased by at least 5% from 2015 acres. By 2025, miles with desired stream stage are increased by at least 5% from 2015 miles.	Area and extent of community Fire regime Native versus non-native species Age class heterogeneity Soil and sediment deposition regime Surface water flow regime	Housing and urban areas Introduced genetic material Invasive plants/animals Livestock farming and ranching	Data Collection and Analysis Management Planning Direct Management Land Acquisition/ Easement/ Lease Outreach and Education Training and Technical Assistance

[1] Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 5 Conservation Targets and Strategies for the South Coast Province

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
California Grassland and Flowerfields	▪ By 2025, acres of habitat are increased by at least 5% from 2015 acres. ▪ By 2025, acres connected are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired endemic plant/animal diversity are increased by at least 5% from 2015 acres. ▪ By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. ▪ By 2025, populations of key species are increased by at least 5% from 2015 population levels. ▪ By 2025, acres/miles with desired plant/animal diversity are increased by at least 5% from 2015 acres/miles. ▪ By 2025, acres with desired genetic connectivity are increased by at least 5% from 2015 acres. ▪ By 2025, acres/miles with natural hydrologic regime are increased by at least 5% from 2015 acres/miles.	▪ Area and extent of community ▪ Fire regime ▪ Connectivity among communities and ecosystems ▪ Successional dynamics ▪ Key species population levels ▪ Endemic diversity ▪ Native versus non-native diversity ▪ Soil and sediment deposition regimes ▪ Nutrient concentrations and dynamics	▪ Annual and perennial non-timber crops ▪ Climate change ▪ Fire and fire suppression ▪ Housing and urban areas ▪ Invasive plants/animals ▪ Livestock farming and ranching ▪ Recreational activities	▪ Data Collection and Analysis ▪ Partner Engagement ▪ Management Planning ▪ Direct Management ▪ Land Acquisition/ Easement/ Lease
American Southwest Riparian Forest and Woodland	▪ By 2025, area of the community is maintained or increased by at least 5% in every watershed throughout the ecoregion. ▪ By 2025, the amount of continuous riparian habitat is increased by at least 5% from 2015 levels. ▪ By 2025, the range of more than one riparian SGCN is maintained or increased by at least 5%. ▪ By 2025, the number of stream miles that display the full range of age classes and vegetation layers (herb, shrub, subtree, trees) are increased by at least 5% from 2015 levels. ▪ By 2025, miles of surface water flows, both ephemeral and permanent, are restored to mimic historic patterns (hydrographs) of flooding and low flow patterns by at least 5% from 2015 miles. ▪ By 2025, at least 5% of riparian habitat (acres) are dominated by native species. ▪ By 2025, greater than 5% of the riparian areas display functional connectivity.	▪ Area and extent of community ▪ Connectivity among communities and ecosystems ▪ Key species population levels ▪ Structural diversity ▪ Native versus non-native diversity ▪ Hydrological regime ▪ Surface water flow regime ▪ Water level fluctuations	▪ Avalanches/landslide ▪ Dams and water management/use ▪ Fire and fire suppression ▪ Garbage and solid waste ▪ Household sewage and urban waste water ▪ Housing and urban areas ▪ Invasive plants/animals ▪ Livestock farming and ranching ▪ Mining and quarrying (no strategies) ▪ Recreational activities (no strategies) ▪ Roads and railroads (no strategies) ▪ Tourism and recreation areas	▪ Data Collection and Analysis ▪ Management Planning ▪ Direct Management ▪ Land Acquisition/ Easement/ Lease ▪ Law and Policy ▪ Outreach and Education
Native Fish Assemblage	▪ By 2025, at least 5% more streams contain their historic native fish composition. ▪ By 2025, at least two more streams have improved connectivity. ▪ By 2025, increase by at least 5% the ratio of native fish to non-native fish in Big Tujunga Creek, Haines Creek, and the Santa Clara River mainstem. ▪ By 2025, all species and their life stages are present and commonly encountered during summer fish surveys within their currently known range. ▪ By 2025, suitable flows are released to maintain target populations below Big Tujunga and Cogswell dams. ▪ By 2025, maintain or increase by at least 5% a natural hydrologic regime in coastal lagoons that support target species.	▪ Connectivity among communities and ecosystems ▪ Native versus non-native diversity ▪ Age class heterogeneity ▪ Diversity ▪ Surface water flow regime ▪ Water level fluctuations	▪ Annual and perennial non-timber crops ▪ Climate change ▪ Dams and water management/use ▪ Household sewage and urban waste water ▪ Housing and urban areas ▪ Invasive plants/animals ▪ Mining and quarrying ▪ Recreational activities	▪ Data Collection and Analysis ▪ Direct Management ▪ Land Acquisition/ Easement/ Lease ▪ Outreach and Education
South Coast Native Aquatic Herp Assemblage	▪ By 2025, area occupied by assemblage is increased by at least 5% from 2015 levels. ▪ By 2025, all populations contain both juvenile (egg and tadpole) and adult life stages in adequate abundance to ensure population sustainability. ▪ By 2025, non-native invasive aquatic species will be reduced by at least 5% within sensitive amphibian habitat, and their source populations identified to aid recovery of native amphibians. ▪ By 2025, restore flow regimes to provide an increase by at least 5% in access to suitable habitat for native species.	▪ Area and extent of community ▪ Native versus non-native diversity ▪ Age class heterogeneity ▪ Surface water flow regime	▪ Annual and perennial non-timber crops ▪ Climate change ▪ Housing and urban areas ▪ Invasive plants/animals ▪ Other ecosystem modifications ▪ Parasites/pathogens/diseases ▪ Recreational activities ▪ Roads and railroads	▪ Data Collection and Analysis ▪ Direct Management ▪ Land Acquisition/ Easement/ Lease ▪ Outreach and Education

[1] Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 6 Conservation Targets and Strategies for the Deserts Province

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
Big Sagebrush Scrub	By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired age class heterogeneity are increased by at least 5% from 2015 acres. By 2025, acres where native species is dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired fire regime are increased by at least 5% from 2015 acres.	Area and extent of community Fire regime Native versus non-native diversity Age class heterogeneity	Fire and fire suppression Housing and urban areas Invasive plants/animals Parasites/pathogens/diseases	Data Collection and Analysis Partner Engagement Direct Management Economic Incentives Land Acquisition/ Easement/ Lease
Great Basin Pinyon-Juniper Woodland	By 2025, acres with desired native species dominance and desired structural diversity are increased by at least 5% within the presettlement range of pinyon-juniper and juniper habitats in the ecoregion. By 2025, acres of desired successional stage are increased by at least 5% from presettlement habitat area. By 2025, acres desired fire return are increased by at least 5% from 2015 levels.	Fire regime Successional dynamics Structural diversity Native versus non-native diversity	Climate change Fire and fire suppression Invasive plants/animals Livestock farming and ranching Other ecosystem modifications	Data Collection and Analysis Partner Engagement Direct Management
Shadscale-Saltbush Scrub	By 2025, at least 5% of the disturbed areas show signs of improved successional dynamics. By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired endemic plant/animal diversity are increased by at least 5% from 2015 acres. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres/miles with natural hydrologic regime have increased by at least 5% from acres/miles. By 2025, acres with suitable soil characteristics are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres.	Area and extent of community Connectivity among communities and ecosystems Successional dynamics Endemic diversity Native versus non-native diversity Hydrological regime Soil and sediment deposition regime	Airborne pollutants Annual and perennial non-timber crops Commercial and industrial areas Housing and urban areas Industrial and military effluents Invasive plants/animals Military activities Recreational activities Renewable energy Roads and railroads Utility and service lines	Data Collection and Analysis Partner Engagement Management Planning Land Acquisition/ Easement/ Lease Outreach and Education Training and Technical Assistance
Desert Wash Woodland and Scrub	By 2025, acres of (desert wash) habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired endemic plant/animal diversity are increased at least 5% from 2015 acres. By 2025, population of key species (Couch's spadefoot) is increased by at least 5% from 2015 population levels. By 2025, acres with desired structural diversity are increased by at least 5% from 2015 acres. By 2025, miles connected (desert wash habitat) are increased by at least 5% from 2015 miles. By 2025, miles with stable bank (desert wash) are increased by at least 5% from 2015 miles. By 2025, miles with desired stream stage (water volume and flow) are increased by at least 5% from 2015 miles.	Area and extent of community Connectivity among communities and ecosystems Key species population levels Structural diversity Endemic diversity Soil and sediment deposition regime Surface water flow regime	Commercial and industrial areas Dams and water management/use Housing and urban areas Military activities Mining and quarrying Recreational activities Renewable energy Roads and railroads Tourism and recreation areas Utility and service lines	Data Collection and Analysis Partner Engagement Land Use Planning Outreach and Education
Sparsely Vegetated Desert Dune	By 2025, acres of habitat free of invasive non-native species are increased by at least 5% from 2015 acres. By 2025, acres of habitat are maintained or increased by at least 5% from 2015 acres. By 2025, acres of habitat with suitable soil characteristics regimes are increased by at least 5% from 2015 acres. By 2025, acres of habitat with desired ground water levels are increased by at least 5% from 2015 acres. By 2025, acres of habitat with desired connectivity are increased by at least 5% from 2015 acres.	Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Hydrological regime Soil and sediment deposition regime	Climate change Housing and urban areas Invasive plants/animals Livestock farming and ranching Recreational activities Renewable energy	Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Use Planning
American Southwest Riparian Forest and Woodland	By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres of target habitat are increased by at least 5% from 2015 acres. By 2025, miles with desired stream stage are increased by at least 5% from 2015 miles.	Area and extent of community Native versus non-native diversity Surface water flow regime	Invasive plants/animals Parasites/pathogens/diseases	Data Collection and Analysis Direct Management Land Use Planning
High Desert Wash and "Rangeland" Scrub Great Basin Upland Scrub	By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, acres with desired structural diversity are increased at least 5% from 2015 acres. By 2025, miles of river with native species dominant are increased by at least 5% from 2015 miles.	Area and extent of community Successional dynamics Structural diversity Native versus non-native diversity	Climate change Fire and fire suppression Invasive plants/animals Livestock farming and ranching Mining and quarrying Renewable energy	Data Collection and Analysis Partner Engagement Management Planning Direct Management

Table 6 Conservation Targets and Strategies for the Deserts Province (continued)

Target	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
Mojave and Sonoran Desert Scrub	By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, acres connected are increased by at least 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres. By 2025, populations of key species are increased by at least 5% from 2015 population. By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres.	Area and extent of community Connectivity among communities and ecosystems Successional dynamics Key species population levels Native versus non-native diversity Weather regime	Annual and perennial non-timber crops Housing and urban areas Invasive plants/animals Renewable energy Roads and railroads Utility and service lines	Partner Engagement Management Planning Land Acquisition/ Easement/ Lease Land Use Planning Outreach and Education Training and Technical Assistance
Walker River Native Fish Assemblage	By 2025, miles of streams with target fish population (SGCNs) are increased by at least 5% from 2015 miles. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, miles connected (i.e., past barriers) are increased by at least 5% from 2015 miles. By 2025, miles with desired stream stage (mimics natural hydrograph) are increased by at least 5% from 2015 miles. By 2025, miles with desired level of water quality (meeting TMDL standards) are increased by at least 5% from 2015 miles. By 2025, miles with desired age class heterogeneity are increased by at least 5% from 2015 acres.	Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water quality	Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Roads and railroads	Data Collection and Analysis Partner Engagement Management Planning Direct Management Law and Policy Outreach and Education
Cienegas	By 2025, acres of cienegas habitat are increased by at least 5% from 2015 acres. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, acres with desired fire regime (frequent low-intensity fire) are increased by at least 5% from 2015 acres. By 2025, acres/miles with desired inches of groundwater (stable depth) are increased by at least 5% from 2015 acres/miles.	Area and extent of community Fire regime Native versus non-native diversity Hydrological regime	Annual and perennial non-timber crops Dams and water management/use Earthquakes/tsunami Fire and fire suppression Housing and urban areas Introduced genetic material Invasive plants/animals Livestock farming and ranching Parasites/pathogens/diseases Renewable energy	Data Collection and Analysis Partner Engagement Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
Springs and Spring Brooks	By 2025, acres of habitat are increased by at least 5% from 2015 acres. By 2025, miles of river where native species are dominant are increased by at least 5% from 2015 miles. By 2025, miles connected are increased by at least 5% from 2015 miles. By 2025, acres/miles with desired inches of groundwater are increased by at least 5% from 2015 acres/miles. By 2025, acres/miles with desired water yield are increased by at least 5% from 2015 acres/miles. By 2025, acres with suitable soil characteristics are increased by 5% from 2015 acres. By 2025, acres with desired stages of succession are increased by at least 5% from 2015 acres.	Area and extent of community Connectivity among communities and ecosystems Successional dynamics Native versus non-native diversity Hydrological regime Soil and sediment deposition regime Surface water flow regime Water quality	Commercial and industrial areas Dams and water management/use Introduced genetic material Invasive plants/animals Livestock farming and ranching Marine and freshwater aquaculture Recreational activities Renewable energy	Data Collection and Analysis Partner Engagement Management Planning Direct Management Land Acquisition/ Easement/ Lease Outreach and Education
Anthropogenically Created Aquatic Features	By 2025, acres where native species are dominant are increased by at least 5% from 2015 acres. By 2025, acres with desired genetic connectivity are increased (between Salton Sea drains) by at least 5% from 2015 acres. By 2025, miles with stable bank are increased by at least 5% from 2015 miles. By 2025, miles with desired stream stage (mimic natural flow hydrograph) are increased by at least 5% from 2015 miles.	Area and extent of community Connectivity among communities and ecosystems Native versus non-native diversity Soil and sediment deposition regime Surface water flow regime Water quality	Agricultural and forestry effluents Dams and water management/use Invasive plants/animals Marine and freshwater aquaculture Recreational activities Renewable energy Roads and railroads	Data Collection and Analysis Partner Engagement Direct Management Land Use Planning Law and Policy Outreach and Education

[1] Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 7 Summary of Conservation Targets and Strategies for the Marine Province

Target*	Goals	Key Ecological Attributes (KEAs)	Pressures[1]	Strategy Categories
Embayments Estuaries Lagoons	▪ By 2025, in coordination with partners, area of target is increased by at least 5% (with 5% of this area available as buffer for sea level rise). ▪ By 2025, increase reproductive success of native shorebirds by at least 5%, increase native oyster populations by at least 5%, and reduce invasive species populations by at least 5%, as indicators of improved community structure in the embayments, estuaries, lagoons ecosystems. ▪ By 2025, protect at least 5% more shorebird habitats to secure high quality embayments, estuaries, lagoons ecosystems. ▪ By 2025, native seagrass (eelgrass) bed acreage is increased by at least 5%. (Will result in an increase in floating vegetation) ▪ By 2025, in coordination with partners, surface water flow (both ephemeral and permanent) is increased by at least 5% into embayments, estuaries, lagoons. ▪ By 2025, in coordination with State Water Boards and other partners, improve the water quality of tributaries that flow into embayments, estuaries, lagoons by meeting at least 5% of the TMDLs. ▪ By 2025, in coordination with partners, at least 5% of the embayment, estuary, and lagoon water bodies improve circulation and hydro-connectivity so that key ecological processes are restored, for example, nutrient and other chemical mixings in the water body are functioning better and improved tidal marsh evolutions are experienced throughout the target. ▪ By 2025, in coordination with State Water Boards and other partners, the water quality standards for at least 5% of embayment, estuary, and lagoon water bodies are met. ▪ By 2025, in coordination with State Water Boards and other partners, the sediment quality objectives for at least 5% of the embayment, estuary, and lagoon water bodies are met.	▪ Area and extent of community ▪ Community structure and composition (e.g., key species population levels, age class structure, biodiversity, endemic diversity, native versus non-native diversity) ▪ Connectivity among communities and ecosystems ▪ Biogenic habitat ▪ Hydrologic characteristics (e.g., flow coming into and out of target) ▪ Quantity of sediment delivered into target (sediment deposition) ▪ Circulation and connectivity within target ▪ Water quality ▪ Sediment quality	▪ Agricultural and forestry effluents ▪ Airborne pollutants ▪ Climate change ▪ Dams and water management/use ▪ Fishing, harvesting, and collecting aquatic resources ▪ Garbage and solid waste ▪ Household sewage and urban wastewater (urban runoff) ▪ Housing and urban areas, commercial and industrial areas (shoreline development) ▪ Hunting and collecting terrestrial animals ▪ Industrial and military effluents (hazardous spills) ▪ Industrial and military effluents, household sewage and urban wastewater (point discharge) ▪ Invasive plants/animals ▪ Logging and wood harvesting ▪ Marine and freshwater aquaculture ▪ Other ecosystem modifications (modification of mouth/channels, ocean/estuary water diversion/control, artificial structures) ▪ Parasites/pathogens/diseases ▪ Recreational activities ▪ Shipping lanes (ballast water)	▪ Data Collection and Analysis ▪ Partner Engagement ▪ Management Planning ▪ Direct Management ▪ Economic Incentives ▪ Environmental Review ▪ Land Acquisition/ Easement/ Lease ▪ Land Use Planning ▪ Law and Policy ▪ Outreach and Education ▪ Training and Technical Assistance

* Conservation strategies were only developed for the embayments, estuaries, lagoon target. Strategies for other marine conservation targets will be developed in the future.
[1] Pressures can be positive or negative depending on the intensity, timing, and duration of the action on the target habitat.

Table 8 Conservation Targets and Strategies for Anadromous Fish

Geography	Conservation Target	Conservation Strategy (Implementation by 2025)	
Statewide	In-river spawning and rearing habitat	▪ Document range and distribution of spawning and rearing habitat. ▪ Enhance and protect key spawning and rearing habitat for each specific anadromous species.	▪ Promote restoration actions that focus on ecological processes and climate change resilience.
	River flow	▪ Identify annual flow regimes necessary for migration, rearing, and spawning of each anadromous species. ▪ Develop water management and conservation plans necessary to conserve anadromous fishes.	▪ Implement water management and conservation plans.
	Wetland habitat	▪ Identify current condition of riparian and marsh habitat associated with anadromous species. ▪ Restore marsh and riparian habitat to improve carrying capacity of anadromous fishes.	▪ Protect key areas necessary to maintain viable populations.
North Coast and North Central Coast	California Anadromous Salmonid Stronghold Watersheds	▪ Establish collaborative working groups for each Stronghold (Smith, Mattole, and South Fork Eel rivers). ▪ Assess ecological and human activities conditions that are allowing for healthy fish populations.	▪ Establish technical, agency, and financial support to maintain and expand ecological and human conditions supporting strong salmon and steelhead populations.
	Coastal estuaries	▪ Evaluate current condition and estuarine needs for coho salmon, eulachon, longfin smelt in key estuaries (i.e., Smith, Klamath, and Eel rivers and Humboldt Bay). ▪ Restore and enhance estuary habitat and processes essential for anadromous species.	▪ Establish estuary function and structure that will allow anadromous migration and be responsive to climate change.
	Russian River	▪ Restore and enhance estuary and river habitat necessary to support viable populations of all listed anadromous fishes (i.e., Chinook salmon, coho salmon, steelhead, green sturgeon). ▪ Develop and implement water management plan to ensure Russian River fisheries and land use are compatible.	▪ Expand Warm Springs Hatchery complex to function as a potential regional conservation facility for coho salmon and other listed species in the North-Central Domain.
Klamath-Trinity Rivers Basin	Pacific lamprey	▪ Establish standing committee to implement interstate/intertribal 2012 Pacific lamprey conservation agreement. ▪ Implement habitat restoration and monitoring programs.	▪ Secure funding specific for conserving Pacific lamprey in the Klamath/Trinity Rivers Basin.
	Ecological processes	▪ Evaluate wood debris, gravel, and water cycling and transport mechanisms across the basins. ▪ Establish agreements and practices to ensure adequate ecological processes are maintained to support sustainable anadromous populations across the basins.	▪ Establish monitoring and evaluation programs to track ecological processes and functioning.
	Listed and at-risk salmonids	▪ Establish standing inter-organizational team to implement federal and state recovery plans, the Trinity River Restoration Plan, and Klamath River Settlement. ▪ Integrate recovery actions with strategic hatchery management (e.g., Iron Gate and Trinity River facilities).	▪ Integrate sustainable river and tribal fisheries with establishing sustainable, natural populations of salmon and steelhead.
South-Central and Southern California Coasts	Steelhead trout populations	▪ Establish a robust monitoring program to evaluate steelhead populations, habitat, and ecological processes. ▪ Secure additional funding necessary to pursue essential habitat recovery.	▪ Determine role of resident populations to recovery and sustainability of anadromous populations.
	Migration barriers	▪ Remediate most downstream barriers to steelhead entering rivers and streams. ▪ Accelerate planning and remediation of rim dam barriers to key steelhead populations.	▪ Modify land use practices (e.g., water use, agriculture, recreation, urban and road development) to minimize effects on migration corridors.
	Water management	▪ In addition to the statewide strategy, identify key streams and locations essential for over-summering juvenile and adult steelhead. ▪ Investigate ability and options to creating water banks for steelhead habitat.	▪ Update CDFW management and conservation plan to integrate modern water management, including drought and climate change parameters.
Central Valley	Pacific lamprey	▪ Establish standing committee to implement interstate/intertribal 2012 Pacific lamprey conservation agreement. ▪ Implement habitat restoration and monitoring programs.	▪ Secure funding specific for conserving Pacific lamprey in the Central Valley.
	Sturgeon	▪ Establish fisheries management and conservation plans for white and green sturgeon. ▪ Implement habitat restoration and monitoring programs.	▪ Secure funding specific for conserving sturgeon populations and fisheries in the Central Valley.
	Chinook salmon and steelhead	▪ Establish biological production goals for each species, coupled with SMART ecological objectives, prioritized restoration actions, focused biotic and abiotic monitoring, and adaptive management planning framework that are developed and overseen by an established standing inter-organizational team to integrate activities of NMFS and CDFW recovery programs, Central Valley Program Improvement Act program, Bay Delta Conservation Plan, San Joaquin River Restoration program, and CDFW fisheries programs to establish sustained salmon and steelhead populations and fisheries.	▪ Revise and integrate hatchery practices of the six facilities in the Central Valley to maximize scientific standards, minimize effects of programs on natural spawning populations and river habitat, and promote healthy fisheries populations. ▪ Conduct rim dam re-introduction pilot projects on Yuba and Sacramento rivers and evaluate efficacy of expanding rearing and spawning habitats for recovery.

How to Use the State Wildlife Action Plan 2015 Update

SWAP 2015 provides an ecosystem approach for the conservation of California's fish and wildlife resources through the identification of strategies intended to address stresses experienced by SGCN and the habitats upon which they depend. The conservation strategies developed in this plan are designed to enhance or maintain the KEAs that define the natural qualities of conservation targets by reducing the pressures that cause ecosystem stresses. CDFW designed SWAP 2015 to guide resource managers, conservation partners, and the public in understanding how they can directly and indirectly participate in conserving California's precious natural heritage. The following guidance is offered in the use of SWAP 2015.

For resource managers, conservation partners, and members of the public who wish to more deeply investigate the data and biologist input behind the SWAP 2015 assessments and conservation strategies, the database files used to compile and evaluate ecological data and management information can be accessed at: http://www.dfg.ca.gov/SWAP/.

SWAP 2015 is organized as follows:

- **Chapter 1** provides an introduction to SWAP 2015. The challenge, CDFW responsibility, and vision for California wildlife conservation are described. Chapter 1 also explains the requirements for updating SWAP and summarizes major changes through the update, including the analytical approach used in the update.
- **Chapter 2** describes California's natural diversity, identifies SGCN and the criteria used to evaluate species and habitat conditions, and addresses major pressures and stresses currently affecting the SGCN and their habitats.
- **Chapter 3** describes the existing conservation approaches in the state, including the major regulations protecting natural resources, CDFW planning tools, and major conservation programs.
- **Chapter 4** presents the statewide goals for SWAP 2015 and broad, state-level conservation strategies that will be implemented to achieve the desired conservation outcomes.
- **Chapter 5** is divided into seven sections that describe, at a province level, the conservation targets, SGCN and other focal species, KEAs, stresses, pressures, and conservation strategies including goals and objectives for the provinces.
- **Chapter 6** focuses on conservation strategies developed for anadromous fishes in California.
- **Chapter 7** describes how SWAP 2015 will be integrated with other programs and coordinated with partners for the implementation, including through companion plans.
- **Chapter 8** describes the monitoring plan for the conservation strategies, including the mandate for CDFW to use monitoring and adaptive management. It also presents a

summary of the effectiveness evaluation of how SWAP 2005 was implemented. The chapter describes how the recommendations from the SWAP 2005 evaluation have been integrated into SWAP 2015. Rationales for selecting conservation strategies presented in SWAP 2015 and a framework for monitoring the effectiveness of the strategies are also described.

- **Chapter 9** provides the list of preparers of SWAP 2015.
- **Chapter 10** provides bibliographic references used in each chapter.
- **Chapter 11** provides a glossary of major terms used in SWAP 2015.
- **Several appendices** accompany SWAP 2015 to provide more detailed information and extensive tables that support the document.

Figure 1 below provides a "roadmap" to the document illustrating how SWAP 2015 is organized.

If questions arise regarding the use of SWAP 2015, please email SWAP@wildlife.ca.gov.

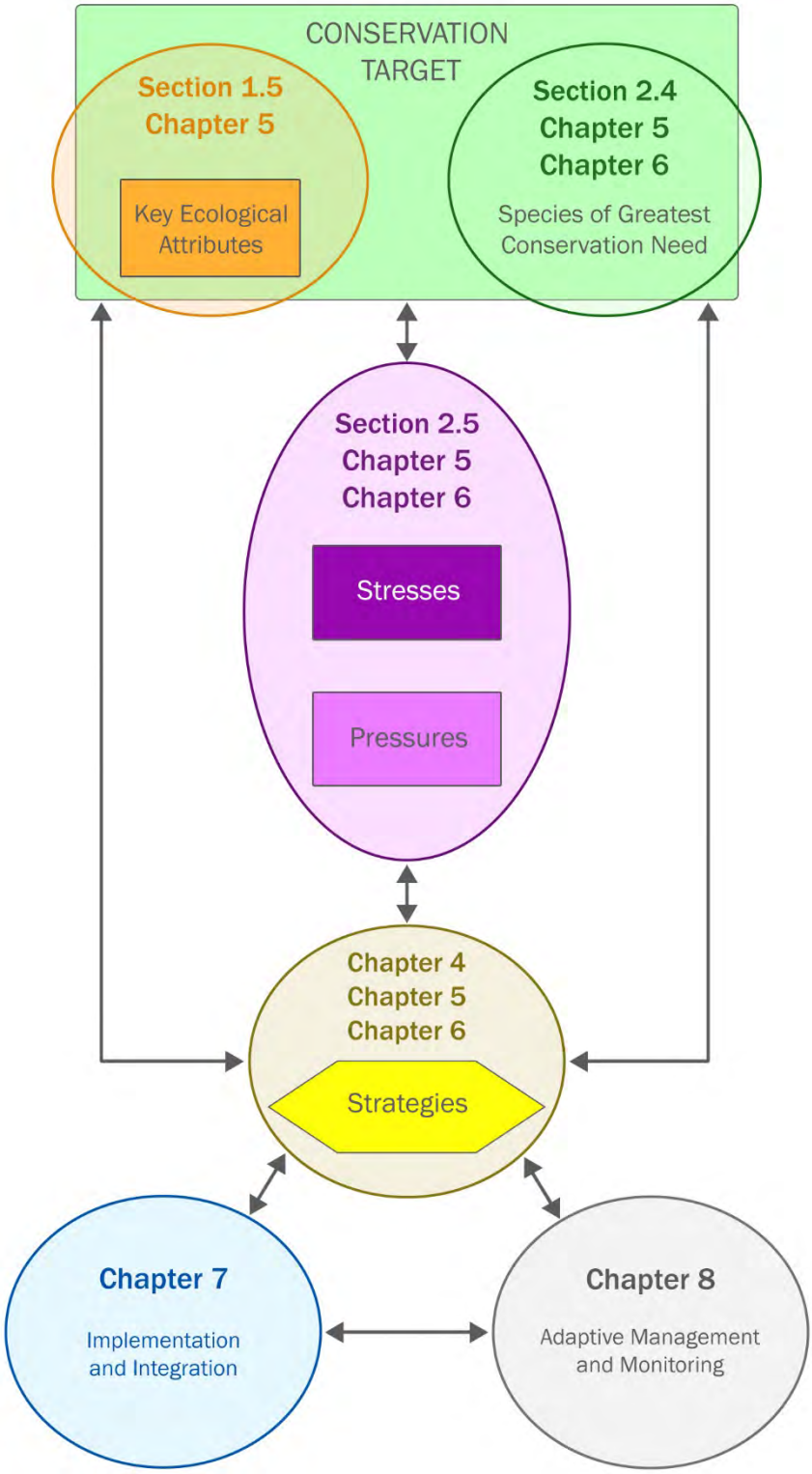


Figure 1 SWAP 2015 Organizational Roadmap

May 26, 2015

California Fish and Game Commission
1416 Ninth St., Room 1320
Sacramento, CA 95814

RE: 2015 State Wildlife Action Plan, Chapter 5.3 - Bay Delta-Central Coast

Dear Commissioners:

The draft 2015 State Wildlife Action Plan (SWAP) calls for a reduction in **legal** hunting, fishing, and harvesting of aquatic resources in the Bay Delta-Central Coast Region.

This language in the draft SWAP conflicts with documents presented in 2013 regarding the Bay Delta-Central Coast Region. In 2013, CDFW released a Fact Sheet for the Region that called for the reduction of **illegal** hunting, fishing, and harvesting of aquatic resources.

It seems that the original 2013 concept of reducing illegal take has morphed into a general reduction in hunting, fishing, harvesting in the draft 2015 SWAP.

In the past, the Commission and the Department have sought science-based decisions concerning the regulation of California's wildlife. To that end, I've submitted to CDFW a Public Records Act Request for any data, reports, or information that support a reduction of **legal** hunting in the Bay Delta-Central Coast Region.

I urge you to please ask the Department to amend the language of the draft 2015 SWAP to reflect the 2013 intent of reducing only illegal hunting, fishing, and harvesting.

Here's a link to the 2013 Fact Sheet that calls for a reduction the illegal consumptive uses:

https://nrm.dfg.ca.gov/FileHandler.a...79077&inline=1

Here's where you can find the reductions to legal hunting and fishing in the 2015 SWAP:

https://nrm.dfg.ca.gov/FileHandler.a...=100044&inline

Chapter 5.3 – Bay Delta and Central Coast

Page 5.3-21 Table 5.3-4 – Key Pressures on Conservation Targets

Page 5.3-47 Conservation Strategies
Intended pressure(s) reduced: Recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources

Page 5.3-49 Conservation Strategy 7 (Management Planning)

Intended pressure(s) reduced: Dams and water management/use; shipping lanes; roads and railroads; recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources.

P 5.3-49 Conservation Strategy 8 (Partner Engagement):
Intended pressure(s) reduced: Dams and water management/use; shipping lanes; roads and railroads; recreational activities; hunting and collecting terrestrial animals; fishing and harvesting aquatic resources.

Page 5.3-50 Table 5.3-9 Stresses and Pressures for North American
Pacific Coastal Salt Marsh
Hunting and Collecting terrestrial animals and Fishing & Harvesting aquatic resources are listing as pressures.

Page 5.3-51 Table 5.3-10 Conservation Targets and Strategies for the Bay Delta and Central Coast Province
Hunting and Collecting terrestrial animals and Fishing & Harvesting aquatic resources are listed as pressures.

Thank you.

Best Regards,
/s/
Scott McMorrow
Inverness, CA

FOR IMMEDIATE RELEASE
DATE: May 28, 2015 6:46:57 PM PDT

Update 25: Unified Command continues to respond to the Refugio Oil Response in Santa Barbara County, California.

Refugio and El Capitan state beaches remain closed to the public as the Unified Command continues to respond to the Refugio Oil Response in Santa Barbara County, California.

Camping reservations for El Capitan and Refugio state beaches have been cancelled through June 18, in an effort to expedite cleanup efforts. The date is subject to change as we continue to reevaluate and assess impacts every week.

As of 6 p.m. Thursday, the Unified Command has 1,193 people working together in support of the response. There are 18 boats, one barge, two helicopters, and one fixed winged aircraft working on cleanup operations. Cleanup crews have removed more than 10,480 gallons of oily water mixture, and our SCAT teams continue to comb the 27.56 miles of affected shoreline out of the 35.53 miles of surveyed shoreline.

As of 6 p.m., Thursday, cleanup crews have removed 251 cubic yards of oiled vegetation, 836.5 cubic yards of oiled sand and 2,000 cubic yards of oiled soil.

The public is advised to avoid contact with the oil and to keep pets away from the area where product has accumulated.

As of 7:20 p.m. Wednesday, a total of 39 live birds found affected by oil and 18 have died since the beginning of the response. In addition a total of 22 mammals have been found affected by oil and 10 have died.

The public should not attempt to rescue oiled wildlife. Untrained individuals who attempt to rescue wildlife may cause more harm than good and may injure themselves in the process. If oiled animals are scared back into the water by pets or people, their chances of survival decrease dramatically.

The Unified Command at the Refugio oil response is aware of the tarballs discovered on 6.5 miles of shoreline at El Segundo, Manhattan, Hermosa and Redondo beaches, and is working closely with the South Bay Incident Unified Command in Los Angeles. Samples are being collected from the South Bay incident for analysis and fingerprinting to determine if the pollution in the South Bay is the result of the Refugio Oil Spill or if it is the result of another source.

For the safety of the cleanup crews and the public, Canada de Alegria to Coal Oil Point fisheries still remain closed until further notice and a safety zone is currently in effect around the fisheries, which extends from west of Coal Oil Point to west of Gaviota State Beach and seven miles out from the shoreline. Mariners in the vicinity may receive broadcasts via marine band radio channel 16.

A Federal Aviation Administration flight restriction is still in effect in the area of the response. Aircraft not directed as part of the response may not enter the airspace of Refugio State Beach. The restriction encompasses a five-mile radius around the park with a 1,000-foot ceiling. This includes the use of drone aircraft.

The Unified Command continues to monitor environmental and economic impacts. A claims line remains free and open to address personal and business losses due to the oil release.

The Unified Command would like to thank the volunteers from the community who stepped forward to receive the required training to help in cleanup efforts. These training classes will continue and members of the public interested in helping should call 1-800-228-4544.

• To report oiled wildlife: 1-877-823-6926

• Volunteer information: 1-800-228-4544

• Volunteers interested in signing up for cleanup operations are required to visit https://calspillwatch.dfg.ca.gov/Spill-Archive/Refugio-Incident/Volunteer

• Claims number: 1-866-753-3619

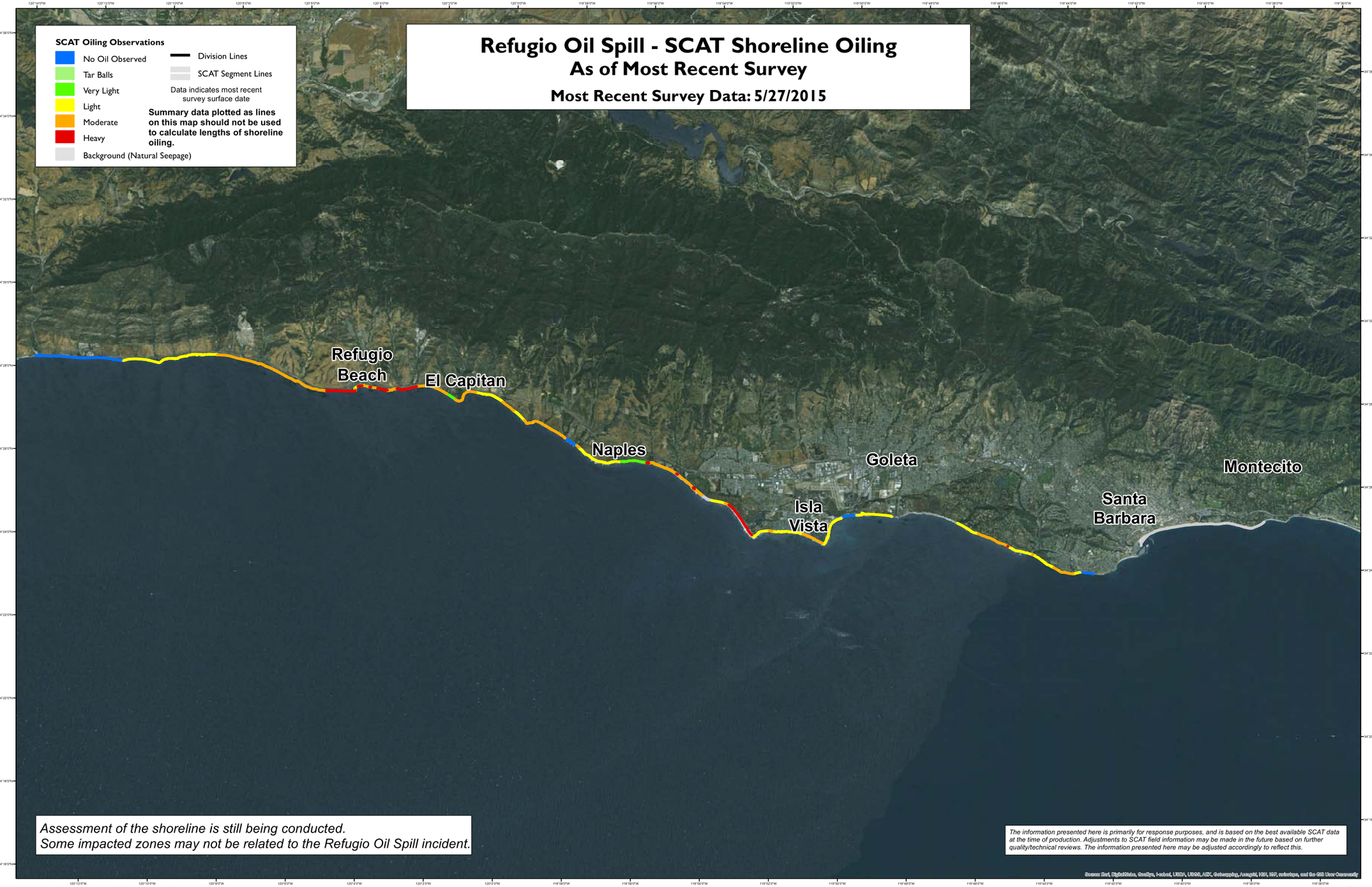
• For more information: www.refugioresponse.com

• Refugio State Beach information http://www.parks.ca.gov/?page_id=601

• El Capitan State Beach information http://www.parks.ca.gov/?page_id=603

For more information contact:
Joint Information Center
reply@refugioresponse.com

Refugio Oil Spill - SCAT Shoreline Oiling
As of Most Recent Survey
Most Recent Survey Data: 5/27/2015



SCAT Shoreline Oiling as of Most Recent Survey - CA
Generated: 5/28/2015 1600

State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Office of Spill Prevention and Response
1700 K Street, Suite 250
Sacramento, California 95811
Telephone: (916) 445-9338
www.wildlife.ca.gov

***EDMUND G. BROWN, JR.**, Governor*
***CHARLTON H. BONHAM,** Director*

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
DECLARATION OF FISHERIES CLOSURE
DUE TO A PUBLIC HEALTH THREAT
CAUSED BY AN OIL SPILL AFFECTING MARINE WATERS
Pursuant to Fish and Game Code § 5654, I find and declare that:

I.

On May 19, 2015 a pipeline break occurred near Refugio State Beach in Santa Barbara County, affecting shorelines to the east and west. The initial statement estimated that 500 barrels of heavy crude oil was released and the responsible party has been identified as Plains All American.

The Office of Environmental Health Hazard Assessment (OEHHA) was informed of this spill. OEHHA recommended that a fisheries closure be initiated. On May 19, 2015 a closure was issued, prohibiting the catch and consumption of finfish and shellfish caught in the area of the closure.

II.

OEHHA has revised its recommendation regarding the geographic boundaries of the closed area. OEHHA is advising that fishers avoid fishing in areas where there is visible sheen on the water.

III.

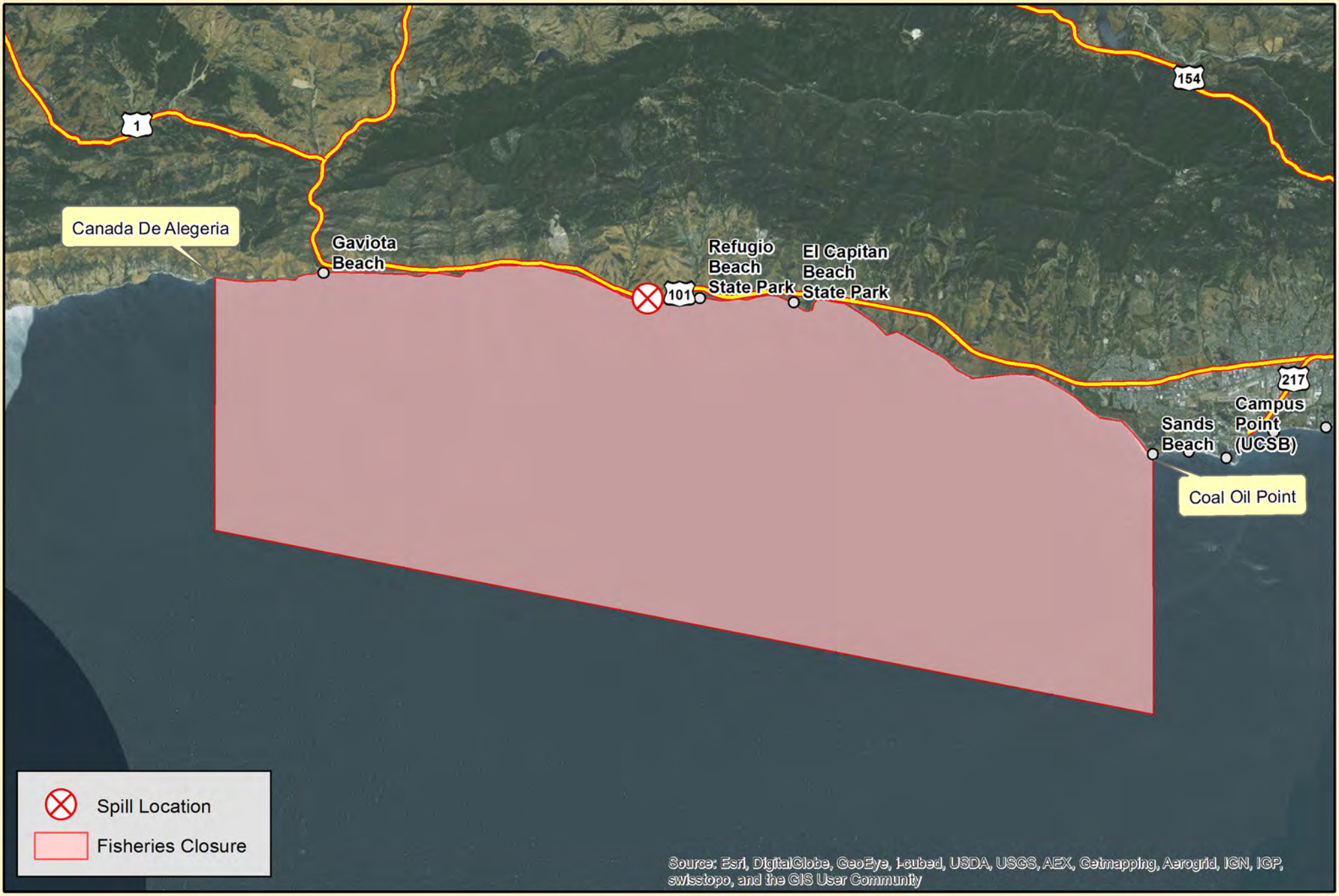
THEREFORE, in consultation with OEHHA, I hereby amend the order of May 19, 2015 by extending the geographic boundaries of the closure to include coastal areas from Canada de Alegeria at the western edge to Coal Oil Point at the eastern edge. The closure boundary includes the shoreline and offshore areas between these points to 6 miles offshore. This closure is effective immediately. This closure prohibits the take of finfish and shellfish either from shorelines or from vessels on the water. Attached hereto is a map of the current closed area.

IV.

This Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its departments, agencies, or other entities, its officers or employees or any other person.

Thomas M. Cullen, Jr., OSPR Administrator *for*
Charlton H. Bonham, Director

5/21/15 1235
Date/Time



Calif. Dept. of Fish and Wildlife
Office of Spill Prevention and Response

Data Source: OSPR GIS
Requestor: L. Chumney
Author: G. Ewing
Date Created: 5/20/2015

NAD_1983_California_Teale_Albers

Fisheries Closure
Refugio Incident
Santa Barbara County

0 2 4 6 8
Miles

State of California
Department of Fish and Wildlife

M e m o r a n d u m

Date: June 2, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Craig Shuman
Regional Manager
Marine Region

Subject: **Marine Region Department Information Item (Agenda Item 14(d)) for the June 10-11, 2015 Fish and Game Commission Meeting Regarding Restoration of Minhoto Marsh within the Elkhorn Slough State Marine Reserve**

This is an informational item only for the Fish and Game Commission with no action requested. Elkhorn Slough is owned by the Department of Fish and Wildlife (Department) and operated in partnership with the National Oceanic and Atmospheric Administration (NOAA) and the local non-profit Elkhorn Slough Foundation. The Elkhorn Slough State Marine Reserve (SMR) has been in place since the Central Coast Marine Protected Areas were adopted in 2007 and is a part of the Elkhorn Slough National Estuarine Research Reserve.

The Elkhorn Slough estuary is one of the largest estuaries in California and contains the State's largest salt marshes south of San Francisco Bay. The slough provides important habitat for an exceptionally broad range of resident and migratory birds, fish, and other wildlife, and plays a crucial role in the local estuarine and nearshore food web. Over the past one hundred fifty years, fifty percent of the tidal salt marsh in Elkhorn Slough has been lost, much of it due to the diking and draining of wetlands for use as pasture land. The Elkhorn Slough Tidal Marsh Restoration Project proposes to restore 147 acres of tidal salt marsh, ecotone, and upland native grasslands. Restoration of the tidal salt marsh will be accomplished by adding sediment and raising the elevation of subsided marsh (now mudflats). This method has been used successfully in the San Francisco Estuary and along the Gulf of Mexico to restore tidal marshes.

The project will restore marsh to an elevation resilient to climate change, reduce tidal scour which continues to erode marsh areas, and improve scientific understanding of salt marsh restoration techniques for the benefit of future projects in Marine Protected Areas. The boundary of the Elkhorn Slough SMR extends to the mean high tide line, therefore some of the project area occurs along the edges of the SMR. However, the footprint of the SMR is not expected to change. A Mitigated Negative Declaration environmental document is in preparation and is expected to be ready for public review early this summer.

If you have questions or need additional information, please contact Dr. Craig Shuman, Regional Manager for the Department's Marine Region, by telephone at (805) 568-1246 or by email at Craig.Shuman@wildlife.ca.gov or Terry Palmisano, Environmental Program Manager, Lands and Wildlife Program, by telephone at (831) 649-2890 or by e-mail at Terry.Palmisano@wildlife.ca.gov.

ec: Dan Yparraguirre, Deputy Director
Wildlife and Fisheries Division
Dan.Yparraguirre@wildlife.ca.gov

California Department of Fish and Wildlife News Release

April 23, 2015

Media Contacts:
Capt. Patrick Foy, CDFW Law Enforcement, (916) 508-7095
Janice Mackey, CDFW Communications, (916) 322-8908

Six Wildlife Officers Receive Medal of Valor, California's Highest Honor

Six wildlife officers from the California Department of Fish and Wildlife (CDFW) were awarded the California Medal of Valor, the state's highest honor, at a ceremony today. The six are among 52 state employees receiving the medal for demonstrating extraordinary acts of bravery and heroism in order to save the life of another.

Governor Brown's Executive Secretary Nancy McFadden presented the awards.

"All of our officers are trained and ready to take on any challenge while working in a remote county, on a river or the ocean or patrolling in an aircraft," said CDFW Chief of Law Enforcement David Bess. "The officers whose actions are being recognized represent the integrity of the entire CDFW force and we are very proud of them."

There are more than 400 wildlife officers responsible for protecting California's natural resources, often working alone on nights, weekends and holidays. They face many challenges as they enforce the laws relating to fish, wildlife and habitat within the state and its offshore waters.

The following officers are being recognized:

Crew of the Patrol Boat *Bluefin*
On Feb. 10, 1996, while patrolling waters off the Santa Cruz coastline aboard the department's 65-foot patrol boat *Bluefin*, Lt. Doug Huckins (now retired), Wildlife Officers Gary Combes and John Ewald and U.S. Coast Guard Petty Officer First Class Richard King, overheard a radio call about a capsized boat in the area.

After a 15-minute dash to the scene, they found the white hull of an overturned boat in the surf line and several people in 50 degree water, including two surfers who had paddled out to assist the victims. The crew could see the surfers taking turns holding up four of the five victims. Both surfers and victims were nearing exhaustion and waving frantically for help in the 12-foot waves.

With no real training on how to affect a rescue of that nature within the surf zone, the entire crew risked themselves to save lives.

Huckins backed the *Bluefin* just off the surf line, while Combes and Ewald launched a rigid-hull-inflatable skiff. They maneuvered into the surf zone riding the backs of the swells, and managed to pluck three of the victims from the water. They rushed them back to the *Bluefin* before returning to locate the other victims, but none were found. Huckins and King recognized that all three victims were in advanced stages of hypothermia after having struggled in the frigid waters for almost 45 minutes, and got the men into the crew's survival suits for added warmth. The men were then airlifted by helicopter to a nearby hospital.

The two surfers had managed to get one victim to shore, but sadly a fifth victim drowned.

The rescued victims later visited Huckins. One of them told of becoming so exhausted he could no longer stay afloat – he sank once, then fought his way to the surface for what he knew would be his last

breath, and as he began to sink for the last time, a wildlife officer's hand came "out of nowhere" and pulled him to safety.

Wildlife Officer Kyle Kroll
On June 17, 2011, Wildlife Officer Kyle Kroll was patrolling the North Fork of the Feather River when he heard a 911 call over the county fire department radio. A vehicle had gone over a ledge and into the Feather River. Kroll was only five miles away and the nearest other rescue personnel were 45 minutes away.

Kroll arrived on scene and saw the vehicle was off a steep embankment and resting precariously on a rock in a section of the river with dangerous rapids. A severely injured husband and wife occupied the vehicle. Kroll determined he could not risk moving either passenger as the weight shift would have caused the vehicle to slip into the river. Kroll provided first aid and relayed pertinent information to emergency responders who were still many critical minutes away.

Kroll then secured the damaged vehicle with a tow strap and chain from his truck. He carefully waded into the swiftly moving river and attached them to the front and rear axles of the car. Assisted by a PG&E worker, Kroll tied the strap and chain to a tree and a rock in order to stabilize the vehicle and prevent it from falling into the river.

Rescue personnel and California Highway Patrol officers then arrived on scene. Because of the continued risk of the vehicle falling into the river, they provided Kroll with another chain, and he again went under the car and attached it to the axle, then to a tree. Only after securing additional straps and cables could the team work to extract the victims from the car and get them to safety.

Lt. Tony Spada
On July 24, 2013, Lt. Tony Spada was off-duty, riding his mountain bike on the south side of Ash Slough in Madera County. A woman ran from the bushes alongside the slough shouting, "My baby was swept away, help me!" Despite the fact he had no rescue equipment available, not even a life jacket, Spada dropped his bike, surveyed the scene and dove into the slough. He swam with the current approximately 50 to 70 yards downstream where he found two small girls hanging onto a branch to keep from being swept under a section of the slough with dense vegetation. Spada swam to their location and found it too difficult to rescue both children at the same time.

He located a safe exit point on the opposite side of the slough. Taking the smallest girl first, he placed her arms around his neck and proceeded to swim her across the slough to safety. He exited the waters, ran up stream and dove back into the water to rescue the second child in the same way.

Spada escorted the children over to officers of the Chowchilla Police Department who were waiting nearby. Both girls were treated for a mild case of hypothermia and shock.

Without Spada's heroic actions, there is no doubt these two young girls would have lost their lives.

Wildlife Officer Arthur Golden
On Oct. 12, 2012, Wildlife Officer Arthur Golden was driving home from training when he came upon a vehicle accident near Corcoran. A small pickup truck had gone off the road and down a steep embankment.

A bystander reported that the victim was pinned in the vehicle and not breathing. Golden quickly checked on the driver, then radioed for help at his vehicle and went back down the hill to the heavily damaged vehicle. Inside, the driver was unconscious and bleeding. The truck was perched precariously on a slope and ready to slide down, potentially rolling over.

Putting himself in great jeopardy, Golden reached through the smashed driver's side window to assess the victim's injuries and provide immediate medical care. While Golden was half-inside the truck, it slid

several inches down the hillside. Golden pulled the driver toward him to relieve the pressure on the downside truck door and stabilize the vehicle from rolling over onto both of them.

Shortly after, local fire and rescue arrived and fully extracted the man from the vehicle and got him to safety.

Video and high resolution photos of the wardens are available at ftp://ftp.dfg.ca.gov/oceo.

# # #

For more than two years, California has been dealing with the effects of drought. To learn about all the actions the state has taken to manage our water system and cope with the impacts of the drought, visit drought.ca.gov. Every Californian should take steps to conserve water. Find out how at saveourwater.com

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Like CDFW on Facebook at www.facebook.com/Californiadfw and Twitter @californiadfw.

California Department of Fish and Wildlife News Release

May 21, 2015

Media Contact:
Jordan Traverso, CDFW Communications, (916) 654-9937

CDFW Takes Three Golds at Excellence in Communications Competition

The California Department of Fish and Wildlife's (CDFW) Alexia Retallack received a Lifetime Achievement Award for her work in public affairs from the State Information Officers Council (SIOC). Additionally, CDFW staff from the Office of Communications, Education and Outreach took top honors in three categories of the 2014 SIOC statewide competition for excellence in state government communications.

The SIOC awards ceremony held recently recognized the frontline of professionals in media relations within state government and showcased their importance in effectively delivering agency or department messages to the public. Honors were awarded in nine different categories ranging from writing to graphic design and audio/visual productions. The annual event encompassed 15 agencies and 120 individual entries.

"I'm so proud of the way CDFW delivers our message to our constituent groups and the general public," CDFW Deputy Director of Communications Jordan Traverso said. "Whether the message comes through a spokesperson in the field or on a DVD produced to showcase a program, our goal is to present the truest, clearest message as quickly as possible. The SIOC awards this team earned indicates they remain at the top of their game."

Highlighting the ceremony was the presentation to Retallack of the Lifetime Achievement Award. The award recognized her dedication to the field of public information for nearly two decades. Starting in 1997, Retallack has served as an information officer, an associate editor and a marketing specialist. In 2009, she took over the public affairs unit at the Office of Spill Prevention and Response under CDFW.

In addition to the three Gold Awards, CDFW earned two Silver awards and two Honorable Mentions by the panel of judges.

Gold Awards
Outdoor California, January-February Issue (publication, magazine)
California Sea Otter Fund 2014 Campaign (media campaign)
Red-Legged Frog Named State Amphibian (writing, news release)

Silver Awards
Inside California's Emerald Triangle (writing, feature)
California Outdoors Q&As ("Best Bang for Your Buck")

Honorable Mentions
Nightingale's Call (writing, feature)
Special Centennial Volume of *California Fish and Game* (special publication)

Individual CDFW communications professionals honored included Marketing Specialists Dana Michaels, Harry Morse and Troy Swauger, Environmental Scientist Carrie Wilson, Audio-Video Specialist Debra Hamilton, Editor Vern Bleich and Communications Manager Kirsten Macintyre.

SIOC is a nonprofit organization offering professional development and networking opportunities for public information officers throughout California. Its annual competition for excellence in state government communications honor media-related professionals.

###

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Like CDFW on Facebook at www.facebook.com/california*dfw and Twitter @CaliforniaDFW.*

California Department of Fish and Wildlife News Release

May 22, 2015

Media Contacts:
Capt. Patrick Foy, CDFW Law Enforcement, (916) 508-7095
Kirsten Macintyre, CDFW Communications, (916) 322-8988

California Rifle and Pistol Association Honors CDFW Assistant Chief Roy Griffith as Wildlife Officer of the Year

Since 2004, recently promoted Assistant Chief Roy Griffith of the California Department of Fish and Wildlife (CDFW) has worked tirelessly to recruit and train new hunter education instructors from throughout California. During his 11 years as captain of California's Hunter Education Program, the number of certified instructors rose from 300 to more than 1,000. The California Rifle and Pistol Association (CRPA) recently recognized these efforts by naming him as their 2014 Wildlife Officer of the Year.

Griffith began his wildlife officer career with CDFW in 1990, working in Southern California's Chino District. He conducted extensive undercover operations as a member of the Special Operations Unit before changing his focus to the enforcement of laws related to habitat destruction. But he is best known for his role as captain of the Hunter Education Program, where his multi-generational approach and passion for "passing on the tradition" are evident to all who have worked with him.

When Griffith took the position of captain, California was experiencing a dramatic decline in the number of hunter education instructors. Griffith stepped up recruitment efforts, putting a special emphasis on bilingual outreach in order to reach prospective hunters who do not speak English as their first language. Now as Assistant Chief, Griffith continues to oversee the Hunter Education Program as part of his overall duties.

The all-volunteer cadre of hunter education instructors forms the framework for CDFW's efforts to promote safe and ethical hunting to the next generation. The program includes annual re-certification of all 1,000 hunter education instructors. During the recertification, they learn the most current hunting and firearm safety training standards aligned with the state's wildlife conservation needs and principles.

Hunter education instructors often volunteer for CDFW in many non-hunter education related venues, such as outdoor sporting shows, community events and anywhere else CDFW staff needs a hand.

Part of CRPA's mission is to ensure proper management and respect for our state's wildlife resources and to encourage public education concerning these resources. CRPA has regularly supported wildlife conservation, wildlife officers and hunting and firearms safety training statewide.

# # #

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California Department of Fish and Wildlife News Release

May 26, 2015

Media Contacts:
Capt. Patrick Foy, CDFW Law Enforcement, (916) 508-7095
Janice Mackey, CDFW Communications, (916) 322-8908

Shikar-Safari Club International Honors Lt. Sheree Christensen as Wildlife Officer of the Year

California Department of Fish and Wildlife (CDFW) Lt. Sheree Christensen was recently selected by the Shikar-Safari Club International as the recipient of its 2014 Wildlife Officer of the Year award.

Each year, the club honors a wildlife officer who has shown exemplary conduct and initiative in the performance of his or her duties. Christensen was selected for her innate ability to lead by example. She has worked in Contra Costa and Alameda counties for more than 25 years and understands local natural resource issues better than anyone in the area. Christensen is known to take the extra step and share her experience and knowledge with those who work with her. She takes the time to teach other wildlife officers within and outside of her squad about San Francisco Bay Area natural resource issues, the laws that protect the resources and why those laws were enacted.

Without hesitation, Christensen accompanies the wildlife officers she supervises on boat patrols, fish business inspections, decoy operations, wildlife checkpoints, undercover operations, investigating illegal streambed alterations and pollution incidents. She has been a leader in CDFW's tenacious effort to stop the illegal sale of prohibited, threatened and endangered species. Christensen has led many special enforcement details to target those who sell recreationally caught fish for personal profit. She prepares the detail plans, utilizing members of her squad, other CDFW squads and allied law enforcement agencies, and follows the cases from the investigation stage through the prosecution stage. Countless state resources have been protected by the tireless efforts of Christensen.

CDFW congratulates Lt. Christensen on this exceptional honor.

Shikar-Safari was founded in 1952 as a hunting organization but quickly recognized its potential to affect meaningful change in the area of wildlife conservation. Funds raised by the Shikar-Safari Club International Foundation are used to support various conservation projects in the United States and throughout the world.

# # #

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California Department of Fish and Wildlife News Release

April 30, 2015

Media Contacts:
Jordan Traverso, CDFW Communications, (916) 654-9937

CDFW Awards $21 Million in Grants for Greenhouse Gas Reduction Projects

Strengthening California's response to long-term climate change, the California Department of Fish and Wildlife (CDFW) today announced the selection of 12 projects that will receive grant funding to restore wetlands that sequester greenhouse gases (GHGs) and provide other ecological benefits.

The grants are CDFW's first distribution of funds from California's cap-and-trade program for combating climate change, and represent a further step toward addressing climate change impacts on the state's biodiversity. Using cap-and-trade proceeds, CDFW and other state agencies are funding a diverse set of investments that will deliver GHG reductions as well as economic, health and environmental benefits.

The Wetlands Restoration for Greenhouse Gas Reduction Grant Program focuses on projects with measurable objectives that will lead to GHG reductions in mountain meadow ecosystems, the Sacramento-San Joaquin Delta and coastal wetlands and provide co-benefits such as enhancing fish and wildlife habitat, protecting and improving water quality and quantity, and helping California adapt to climate change.

CDFW received 27 proposals requesting a total of $49 million in grants. All proposals underwent an initial administrative review; those that passed were then evaluated through a technical review process that included review by internal scientists, external academic experts, and a representative of the Air Resources Board. The proposals were scored based on criteria that included applicant qualifications, project description, greenhouse gas reductions, co-benefits, climate change considerations and scientific merit.

CDFW Director Charlton H. Bonham approved 12 projects for $21 million in funding to restore or enhance approximately 2,500 acres of wetlands and mountain meadows. Grant agreements will be finalized and work will begin in the current fiscal year.

"Wetlands are critically important fish and wildlife habitats," Bonham said. "They benefit the ecosystem, provide water storage and supply, and have one of the highest rates of carbon sequestration. Our department has a long history of habitat restoration, often in concert with many valued partners. This is an exciting opportunity to expand the traditional focus of fish and wildlife habitat conservation to achieving other important benefits to society."

The funded projects are:

- North Campus Open Space Wetlands Restoration, ($999,989 to Regents of the UC Santa Barbara)

- Blue Carbon at Elkhorn Slough: Increasing Regional Carbon Sequestration Through Salt Marsh Restoration, ($2,996,768 to Elkhorn Slough Foundation)

- Initiation of Thin-layered Sediment Augmentation on the Pacific Coast: An Action to Ensure the Long Term Availability of Coastal Salt Marsh for Carbon Sequestration/Storage, as well as to Support the Conservation of Habitat to Support Listed and Sensitive Wetland Species, ($1,055,827 to U.S. Fish and Wildlife Service)

- Sherman Island Wetland Restoration Project, ($10,386,139 to Reclamation District 341)

- Restoration of the Carbon Storing Ecosystem in Tuolumne Meadows, Yosemite National Park, ($587,996 to Yosemite National Park)

- A Demonstration of the Carbon Sequestration and Biodiversity Benefits of Beaver and Beaver Dam Analogue Restoration Techniques, ($539,672 to Center for Watershed Sciences, UC Davis)

- Yuba Headwaters Meadow Restoration, ($567,480 to South Yuba River Citizens League)

- Developing a Protocol for Net Carbon Sequestration from Restoration of Eastern Sierra Meadows, ($921,766 to California Trout, Inc.)

- Mountain Meadows Restoration Project at Greenville Creek and Upper Goodrich and Effects on GHGs, ($679,566 to Plumas Corporation)

- Middle Martis Creek Wetlands Restoration, ($594,176 to Truckee River Watershed Council)

- Truckee Meadows Restoration Project, ($1,495,551 to Truckee River Watershed Council)

- Bean Meadow Restoration Project, ($493,542 to Sierra Foothill Conservancy)

More information about the CDFW program can be found at www.wildlife.ca.gov/Conservation/Wetlands-Restoration.

Funding for these projects comes from the Greenhouse Gas Reduction Fund, an allocation in the Governor's Budget of cap-and-trade auction proceeds to CDFW and other state agencies and departments. Cap-and-trade is a market based regulation that is designed to reduce GHGs from multiple sources. See more information about California's Cap-and-Trade Program.

# # #

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California Department of Fish and Wildlife News Release

May 7, 2015

Media Contact: Jordan Traverso, CDFW Communications, (916) 654-9937

Diverse Coalition Negotiating Historic Venture to Reintroduce Salmon to Sierra

Spring-run Chinook salmon could return to their historic spawning habitat on the North Yuba River under a still-developing agreement involving three agencies and three conservation groups. Working together as the "Yuba Salmon Partnership Initiative," the coalition released a framework for such an agreement today.

When completed, the agreement would create a first-ever "collect and transport" program in California, like those successfully used for decades in Oregon and Washington to move salmon around dams too tall for fish ladders. The program would return spring-run Chinook salmon and possibly steelhead to more than 30 miles of the North Yuba River. Deep, cool pools on this stretch of the river provide ideal habitat for the species that summers in mountain streams before spawning in the fall. In addition, the agreement would create a program to enhance salmon and steelhead habitat in the lower Yuba River downstream of the U.S. Army Corps of Engineers' Englebright Dam.

The California Department of Fish and Wildlife (CDFW), National Marine Fisheries Service (NOAA Fisheries), Yuba County Water Agency (YCWA), American Rivers, Trout Unlimited and California Sportfishing Protection Alliance released a "Term Sheet" that will guide negotiations on a binding settlement agreement that would form the basis of salmon reintroduction and restoration programs. The non-binding Term Sheet defines principles for funding and fiscal responsibility, agrees to some limits on potential actions, and anticipates how the partners will seek to address numerous legal and regulatory requirements essential for the reintroduction to happen. In signing the Term Sheet, the partners commit to negotiating a more detailed and binding settlement agreement that they hope to complete by next year. They also commit to the use of a transparent, science-based process that offers opportunities for public input and response in developing the specifics of the anticipated programs.

"This initiative is an ambitious undertaking to restore spring-run Chinook and steelhead to miles of historic pristine habitat in the Sierra Nevada Mountains," said Charlton H. Bonham, CDFW Director. "This long-term experiment has been successful in several Pacific Northwest states and we hope for a similar outcome in California. A project of this importance wouldn't be possible without a robust partnership, and considering the state's unprecedented drought, it couldn't be happening at a more crucial time for these fish."

The Yuba Salmon Partnership Initiative seeks to accomplish a major goal set forth in Governor Edmund G. Brown Jr.'s California Water Action Plan. This five-year plan, released in January 2014, spells out actions needed to restore California's key ecosystems, and bring greater resiliency and reliability to its water resources. Directives in the plan include establishing fish passage around "rim" dams in the foothills of the Sierra Nevada that block historic salmon and steelhead habitat.

Director Bonham added, "Collaboration with Sierra County and other stakeholders will be important for us to ensure this program recognizes their needs."

The salmon reintroduction program, if implemented as envisioned in the Term Sheet, would return salmon to spawning habitat in the North Yuba River using specially designed collection facilities and trucks. This would allow adult fish to bypass two dams northeast of Marysville: the U.S. Army Corps of Engineers' Englebright Dam, built in 1941 to trap debris generated by hydraulic mining, and YCWA's New Bullards Bar Dam, built further upstream in 1970 to provide flood protection, water supply and power generation. The program would move juvenile salmon downstream in the winter and spring by gathering them in collection facilities above New Bullards Bar Dam and trucking them downstream past the dams to resume their journey to the Pacific Ocean. The reintroduction effort would focus first on spring-run Chinook salmon. If successful, a steelhead reintroduction could follow. Providing fish access to historical habitat is also a climate change adaptation strategy.

"Reintroducing spring-run Chinook to their historic habitat above dams on the Yuba River has been discussed for decades," said Will Stelle, NOAA Fisheries West Coast Regional Administrator. "Now this diverse coalition has reached agreement on the key terms to launch a successful program. We have a lot of work still ahead of us, and we will need to stay focused, given the urgency of getting these imperiled salmon back into their native habitat. The YSPI represents a major step forward, and we're excited to help make it happen."

The Term Sheet also envisions a program to analyze, prioritize and implement habitat actions in the Lower Yuba River downstream of Englebright Dam. These actions are likely to include improvement of riparian vegetation, measures to restore salmon spawning habitat and measures to improve rearing habitat for juvenile salmonids, including the expansion of side channel and floodplain areas to promote rapid growth of young salmon before they migrate to the ocean.

"Reuniting salmon with their historic habitat into the North Yuba River through a collaborative, voluntary initiative is a worthwhile endeavor that we believe will ultimately benefit our environment, the people of Yuba County and all of California," said John Nicoletti, Chairman of the YWCA Board of Directors.

YCWA has agreed to pay up to $100 million of total project costs, which are estimated at $400-$500 million, over the 50-year life of the program (2015 dollars). The Term Sheet defines additional commitments by the partners. These include support for various regulatory approvals that the project will require; evaluation of North Yuba River habitat suitability; evaluating collection and transport facilities; development of biological and habitat goals and objectives; and development of an adaptive management plan so that the program can be adjusted based on monitoring results.

The project promises to yield a wealth of scientific information that may aid other reintroduction efforts, other ecosystems and fisheries science overall. Once implemented, it would test whether "collect and transport" programs can contribute to the recovery of Central Valley salmon populations as they have contributed to the recovery of salmon populations in the Pacific Northwest.

For more information, please visit www.dfg.ca.gov/fish/Resources/Chinook/YSPI/.
For statements from coalition members click YSPI Coalition Quote Sheet.

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California Department of Fish and Wildlife News Release

May 13, 2015

Media Contact:
Capt. Patrick Foy, CDFW Law Enforcement, (916) 508-7095

Poachers Take Advantage of Drought Conditions to Target Juvenile Salmon

California wildlife officers patrolling the Sacramento River recently cited six suspects for unlawfully taking and possessing juvenile salmon, and using the young fish as bait to target sturgeon. All of the suspects initially denied use of salmon as bait, but wildlife officers were able to reel in their lines and show them the dead salmon on their hooks.

The alleged poachers worked during the early morning hours under the cover of darkness and focused their effort on sandbars on the Sacramento River in Yolo and Sacramento counties. The sandbars were recently exposed due to drought conditions. Wildlife officers from the California Department of Fish and Wildlife's (CDFW) Delta Bay Enhanced Enforcement Project (DBEEP), Special Operations Unit (SOU) and local squads continue to use the Governor's drought overtime support to step up patrols in these sensitive areas to protect salmon and sturgeon from poachers.

In the first case, a wildlife officer observed two subjects wading in the Sacramento River and using a large net to capture juvenile salmon near a sandbar created by the low flow conditions. They netted the small salmon for later use as bait to fish for sturgeon. The wildlife officer ultimately determined that the two anglers and one more fisherman used fishing rods baited with the juvenile salmon they'd caught. Tony Saetern, 25, Michael Anglero, 24, and Kao Saeyang, 28, all of Sacramento, were each cited for unlawful use of salmon as bait and unlawful possession of salmon out of season.

A few nights later, wildlife officers observed a suspect using a hand light and dip net to unlawfully capture and keep multiple juvenile salmon in the same area of the Sacramento River. The officers watched as a total of three suspects in the group appeared to use the salmon as bait for fishing. Officers contacted the suspects and found two of them in possession of fishing rods with hooks baited with the salmon. As the officers were conducting the investigation, a sturgeon was hooked on another fishing rod belonging to the group, was landed and released. Officers found the group in possession of a Snapple beverage bottle containing 14 additional juvenile salmon for later use as bait.

Nai Poo Saechao, 36, of Antelope and Lai C Saechao, 27, of Sacramento, were both cited for unlawful use of salmon as bait, possession of salmon out of season and an overlimit of salmon. Vincent Sai Poo Saechao, 23, of Antelope, was cited for unlawful method of take of salmon.

"During this time of year, juvenile salmon are migrating downstream to the Delta and are vulnerable to this type of poaching as they seek shelter from prey fish close to shore," DBEEP Warden Byron Trunnell explained. "Salmon season is closed on the Sacramento River, and nets are not an authorized method of take for game fish in inland waters."

The unlawful practice of catching juvenile salmon for bait has long been a concern and is an enforcement priority this time of year. Poaching pressure on salmon is particularly harmful now, given California's current drought situation. CDFW and numerous other agencies on both the state and federal levels are taking action wherever possible to support the long-term viability of salmon populations of the Sacramento River watershed.

CDFW appreciates legitimate anglers and asks for the public's help in apprehending those who are taking advantage of our natural resources. Illegal activity can be reported through the CDFW Californians Turn In Poachers and Polluters (CalTIP) line at 888-334-2258, or via email or text (please see www.dfg.ca.gov/enforcement/caltip.aspx for details).

###

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California Department of Fish and Wildlife News Release

May 12, 2015

Media Contacts:
Scott Gardner, Wildlife Branch, Upland Game Program, (916) 801-6257
Janice Mackey, CDFW Communications, (916) 322-8908

CDFW and Partners Investigate Decline in Pheasant Population

The California Department of Fish and Wildlife (CDFW) recently hosted a pheasant ecology workshop to examine possible causes of a decline of the state's pheasant population over the last 25 years.

Held in cooperation with Pheasants Forever, the workshop convened more than 45 state and federal scientists, public and private land managers, and representatives from Ducks Unlimited and the California Waterfowl Association.

Participants reviewed research from scientists at the US Geological Survey and heard from pheasant experts from across the nation. Data collected showed that contributing factors to the decline include changes in agricultural practices, growth of forested habitats in historic wetland and grassland environments, climate change and predation from increasing raven populations.

"The combination of modern analysis tools and on-the-ground land management techniques helped us chart a map forward, which is especially important during the drought," said CDFW Upland Game Program Scientist Matt Meshriy. "We look forward to collaborating with Pheasants Forever and other conservation partners interested in this species."

The workshop, held on April 30 and May 1, included presentations by Dr. Les Flake of South Dakota State University and Senior Research Biologist Dave Musil of Idaho Fish and Game. CDFW managers from six state wildlife areas and federal partners from the Sacramento National Wildlife Refuge Complexes also presented reports on site-specific conditions that described the breadth of habitat challenges facing pheasants and other upland nesting bird species throughout the state.

Pheasants were introduced in California in the 1890s and adapted well in the agricultural regions of the state. By the mid-1960s, about 250,000 hunters were spending about 800,000 days afield in pursuit of this game bird. Since the mid-1990s, populations have been steadily declining. In 2010, only about 30,000 pheasant hunters spent about 100,000 days afield.

Pheasants Forever is the nation's largest nonprofit organization dedicated to upland habitat conservation. Pheasants Forever and Quail Forever have more than 140,000 members and 700 local chapters across the United States and Canada. Chapters are empowered to determine how 100 percent of their locally raised conservation funds are spent; the only national conservation organization that operates through this truly grassroots structure. Since its creation in 1982, Pheasants Forever has spent $577 million on 475,000 habitat projects benefiting 10 million acres nationwide.

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California Department of Fish and Wildlife News Release

May 22, 2015

Media Contacts:
Dr. Vern Bleich, California Fish and Game Editor, (916) 322-8911
Carol Singleton, CDFW Communications, (916) 322-8962

California Fish and Game Scientific Journal Completes 100th Anniversary Series

The California Department of Fish and Wildlife (CDFW) just published the fourth and final 100-year special anniversary issue of the highly respected scientific journal *California Fish and Game.*

Print copies of the latest issue, focusing on special fisheries, and the three previous issues on native plants, marine life and terrestrial wildlife, are available for purchase through Aug. 31. Volumes 1, 2 and 4 are $6.47 each, plus tax and shipping. Volume 3 is $8.25, plus tax and shipping.

All four issues are also available for download at no charge. Links to both options can be found at www.dfg.ca.gov/publications/journal/contents.html.

The newly released special fisheries issue includes both historical accounts and the results of original research on fisheries ecology conducted by CDFW scientists, as well as by scientists in other resource management agencies, academic institutions and non-governmental organizations. It features an introduction by Fran Pavley, Chair of the Senate Natural Resources and Water Committee, and additional remarks co-authored by CDFW Director Charlton H. Bonham and E. Philip Pister, retired CDFW fisheries biologist.

In her introduction to the fisheries issue, Pavley writes, "This topic is appropriate—or perhaps ironic—in this third year of severe drought, when fresh water supply is a critical issue for all Californians. The drought's effects may be even more severe on wildlife than on humans, since fish and animals can't store, import pump groundwater, or buy water in bottles. They live or die with what nature (and sometimes we) can provide."

California Fish and Game is an internationally recognized research publication read primarily by scientists in the fields of conservation, ecology and natural resource management. It focuses on the wildlife of North America's west coast (primarily California) and the eastern North Pacific Ocean, but occasionally includes material from elsewhere. It is the longest continuously running scientific journal in California.

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California Fish and Game Commission

Staff Report on Staff Time Allocation – May 2015

June 1, 2015

Staff time is a tangible and invaluable asset. This report identifies where Commission staff allocated working time to general categories during the month of May 2015 (see table); note that the total percentage of staff time is greater than 100% as a result of overtime. This report also highlights some of the specific activities for May and those that are anticipated for June.

General Allocation

Category*	May Staff Time Expended
Regulatory Program	11%
Commission Meetings	16%
Legal Matters	3%
External Affairs	5%
Special Projects	2%
Administration	13%
Leave Time	31%
Unfilled Positions	22%
Total Staff Time	103%

Note: Total staff time is greater than 100% due to overtime

Activity Highlights

Highlights for activities conducted in May:

- Prepared for and conducted the May Wildlife Resources Committee meeting
- Collaborated in hosting Heal the Bay's Pier and Jetty Summit
- Participated in the marine protected areas statewide leadership team meeting
- Participated in the California Ocean Protection Council/California Ocean Science Trust/California Department of Fish and Wildlife Marine Protected Areas Master Plan Team meeting
- Participated in the California Department of Fish and Wildlife Executive Leadership Team meeting
- Represented the commission at the California Department of Fish and Wildlife Upland Game and Big Game advisory team meetings
- Prepared for the June Commission and Tribal Committee meetings

Highlights of activities expected for June:

- Prepare for and conduct the June Commission and Tribal Committee meetings
- Prepare for the July Marine Resources Committee meeting
- Participate in the Marine Life Management Act Master Plan Team meeting
- Represent the Commission at the Governor's Tribal Liaisons meeting
- Prepare budget report for August meeting
- Participate in the marine protected areas statewide leadership team meeting
- Participate in the Native American Day planning committee meeting

*** General Allocation Categories with Sample Tasks**

Regulatory Program

- Coordination meetings with DFW to develop timetables and notices
- Prepare and file notices, re-notices, ISORS and FSORs
- Review and process CESA petitions
- Track and respond to public comments
- Consult, research and respond to inquiries from OAL
- Prepare administrative records

Commission Meetings

- Develop and distribute meeting agendas and materials
- Track and respond to public requests/petitions
- Agenda and debrief meetings
- Prepare meeting summaries and audio files
- Develop and distribute after-meeting memos/letters
- Maintain voting records
- Make travel arrangements for staff and commissioners
- Conduct onsite meeting management
- Process submitted meeting materials
- Provide commissioner support
- Process and analyze regulatory petitions and non-regulatory requests

Legal Matters

- Respond to Public Records Act requests
- Process appeals and accusations
- Process requests for permit transfers
- Litigation

External Affairs

- Legislation
- DFW partnership
- State and federal agency collaboration

Special Projects

- Predator Policy Workgroup
- Fishing from piers and jetties
- Fisheries Bycatch Workgroup
- Streamlining routine regulatory actions

Administration

- Correspondence
- Purchases and payments
- Contract management
- Personnel management
- Strategic planning and staff coordination
- Budget development and tracking
- Health and safety oversight
- Internal processes, procedures and form
- Staff training and professional development

Leave Time

- Holidays
- Sick leave
- Vacation
- Absence without leave

Unfilled Positions

- Deputy executive director
- Staff attorney
- Wildlife Advisor
- Executive secretary

FISH AND GAME COMMISSION LEGISLATIVE TRACKING LOG 2015

updated 5/29/2015

WPW = Water, Parks, Wildlife **RLS** = Rules **APPR** = Appropriations **GO** = Government Organization **AAR** = Accountability and Admin. Review
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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-12	Minor	Cooley (A)	**State government: administrative regulations: review --** Would, until January 1, 2019, require each state agency to, on or before January 1, 2018, review that agency's regulations, identify any regulations that are duplicative, overlapping, inconsistent, or out of date, to revise those identified regulations, as provided, and report to the Legislature and Governor, as specified.	Tto add and repeal Chapter 3.6 (commencing with Section 11366) of Part 1 of Division 3 of Title 2, Government Code	05/28/15 2nd read. To third reading. 5/28/15 From committee: **Pass (17-0.)** 5/13/15 Referred to APPR. suspense file. 4/29/15 - **PASS (9-0)** 4/23/15 Re-ref to AAR 4/22/15 Amend, 2nd read 1/16/2015 - Ref to AAR	4/29/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-14	None	Waldren (A)	**Unmanned aircraft systems: task force --** Would create the Unmanned Aircraft Systems Task Force, responsible for formulating to research, develop, and formulate a comprehensive plan policy for state regulation of unmanned aircraft systems.		4/6/2015- Re-ref to TRANS. 3/26/2015- Amend; 2nd read 2/13/2015- Re-ref to TRANS. 1/16/2015- Ref to TRANS and BPCP	4/13/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-56	None	Quirk (A)	**Unmanned aircraft systems.--** Would prohibit public agencies from using unmanned aircraft systems, or contracting for the use of unmanned aircraft systems with certain exceptions applicable to law enforcement agencies subject to approval by the legislative body having management and control of the law enforcement agency and other specified conditions, and in certain other cases, including when the use achieves the core mission of the agency and the purpose is unrelated to the gathering of criminal intelligence, as defined.	Add Section 6254.31 to the Government Code, and to add Title 14 (commencing with Section 14350) to Part 4 of the Penal Code	5/26/15 In Senate. 1st read.. . **5/26/15 3rd read. Passed. To Senate** 5/14/15 2nd read. 5/13/15 PASS (17-0) 4/30/15 PASS (9-1). To APPR 4/23/15 Re-ref to PCP 4/22/15 Amend, 2nd read 4/15/15 Re-ref PCP 4/14/15 PASS (6-0) 4/9/15 Re-ref PUBS 4/8/15 Amend, 2nd read 1/22/15 Ref to PUBS and PCP	4/14/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-92	None	Committee on Budget (A)	Would require DFW to provide written notice to the owner that the diversion is deleterious to salmon and steelhead, to submit to the owner its proposals as to measures necessary to protect the salmon and steelhead, impose an civil penalties of up to $8,000 for a violation of this provision, and other provisions related to water.	Amend Section 6100 of, and to add Sections 12025.1 and 12025.2 to, the Fish and Game Code, add Section 8687.9 to the Government Code, amend Section 4629.6 of the Public Resources Code, and to amend Section 81046 of, to amend, repeal, and add Section 13442 of, and to add Sections 189 and 81023 to, the Water Code.	4/02/15- Enrolled measure corrected 3/26/15- Present to Gov . 3/26/15- **PASS (50-27).** 3/26/15- Concurrence w Sen 3/25/15- **3rd read PASS (25-14)** 3/25/15- PASS (11-4) 3/24/15- Amend, 2nd read 3/24/15- Re-ref BFR. 3/23/15- Ref BFR 3/23/15- In Senate. 1st read 3/23/15- 3rd read PASS (51-27) 3/19/15- 2nd read 1/26/15- Referred BUD		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-96	None	Atkins (A) Lara (S)	**Animal parts and products: importation or sale of ivory and rhinoceros horn** -- This bill would delete the criminal exemption for products imported before 1977. And, prohibit a person from purchasing, selling, offering for sale, possessing with intent to sell, or importing with intent to sell ivory or rhinoceros horn, except as specified, and would make this prohibition enforceable by the Department of Fish and Wildlife.	Add Section 2022 to the Fish and Game Code, and to repeal Section 5 of Chapter 692 of the Statutes of 1976, relating to animal parts and products.	5/28/15 - **PASS (12-4)** 3/25/15 - Referred to suspense file. 3/10/15 - **PASS 10-2-3** 1/26/15 - Ref to WPW		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-142	None	Bigelow (A) Berryhill (S)	**Wild and scenic rivers: Mokelumne River --** Would require the Secretary, in a report analyzing the suitabliity or nonsuitability of a proposed designation of the Mokelumne River, to consider the potential effects of the proposed designation on future water requirements, as specified, and the effects of climate change on river values and water supply, and to consider other factors.	Amend Section 5093.548 and add Sections 5093.548 and 5093.649 to the Public Resources Code, relating to wild and scenic rivers.	5/28/15 2nd read. To 3rd reading. 5/28/15 PASS (17-0) 4/7/2015- Re-ref to APPR 4/6/2015- 2nd read 3/23/2015- Ref to APPR 3/26/2015- PASS (8-1) 1/26/2015 - Ref to NR	3/23/2015	

FISH AND GAME COMMISSION LEGISLATIVE TRACKING LOG 2015

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-226	None	Atkins (A)	**Retail food safety: fisherman markets --** would create new type of nonpermanent food facility, that would be a food facility operated by a licensed commercial fisherman, a registered aquaculturist, or an entity representing California seafood producers, that sells only edible aquatic plants, raw fresh fish, or fresh frozen fish, legally caught by California-licensed commercial fishermen or harvested by California-registered aquaculturists, directly to consumers. The bill would establish and impose food safety and sanitation requirements upon a fishermen's market.	An act to amend Sections 113779, 113789, 113839, 113984, and 114266 of, and to add Sections 113729.5, 113780, and 113794.3 to, and to add Chapter 12.7 (commencing with Section 114378) to Part 7 of Division 104 of, the Health and Safety Code, relating to food safety.	4/15/15 PASS (17-0) 4/8/15 Re-ref to HEALTH 4/7/15 Amend., 2nd read 3/2/15 Ref to HEALTH		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-290	Major	Bigelow (A)	**Game mammals: wild pig depredation --** Would define “pigs”, prohibit release into uncontrolled areas, eliminates DFW required management plan, requires 25-40% of funds from sale of wild pig validations be used to remedy damage by pigs, replaces wild pig tag with a validation on the hunting license which permits unlimited take and possession, set price of pig validation at $15 for residents and $30 for nonresidents, prohibit take at night unless the department is notified by 3:00 p.m. prior to the planned take or, if the daylight hours before the planned take are not on a business day, by 3:00 p.m. of the last business day before the planned take and the person taking the wild pig possesses a valid hunting license.	Amend Sections 714, 3953, 4181, 4181.1, 4188, 4650, 4654, and 13005 of, to repeal Sections 4181.2, 4656, and 4657 of, and to repeal and add Sections 4651, 4652, 4653, and 4655 of the Fish and Game Code	4/06/15- Re-ref WPW 3/26/15- Amend. 2nd read. 03/26/15 Ref WPW.		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-298	None	Gonzalez (A)	**Fish and wildlife: violations--** Would make a violation of a specified regulation relating to marine protected areas, marine managed areas, and special closures an infraction or a misdemeanor, except if the person who violates the regulation holds a commercial fishing license or a commercial passenger fishing boat license.	Amend Section 12000 of the Fish and Game Code	5/07/15 Ref to NRW 4/20/15 Senate, 1st read, to RLS 4/20/15 3rd read, **PASS (80-0).** To Senate 4/15/15 2nd read, to Consent 4/14/15 **PASS (15-0)** 2/23/2015 - Ref to WPW	4/14/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-353	None	Lackey (A)	**Protected species: take: Bouquet Canyon: habitat restoration project**. -- Permit DFW to authorize, under the California Endangered Species Act, the take of the unarmored threespine stickleback resulting from impacts attributable to the habitat restoration project to restore and improve riparian habitat on public lands in the Bouquet Canyon area, and projects to restore the flow capacity to Bouquet Creek in Bouquet Canyon on public lands, as specified, if certain conditions are satisfied.	Amend Section 5515 and add Section 2081.6 of the Fish and Game Code	5/28/15 Ref ro NRW 5/14/15 1st Read. To RLS for assignment 5/14/15 3rd read. Passed . To Senate 5/07/15 2nd read. To Consent. 5/06/15 Pass. (17-0). To Consent. 4/28/15- PASS (15-0). Ref to APPR Consent. 4/23/15- Re-ref to WPW 4/22/15- Amend, 2nd read 4/06/15- Re-ref WPW 3/26/15- Amend., 2nd read 3/26/15- Ref WPW	4/28/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-395	Major	Gallagher (A)	**Hunting: nonlead ammunition** -- Would repeal the latter restriction against the use of nonlead ammunition for the taking of all wildlife and related provisions.	Amend Section 3004.5 of the Fish and Game Code	4/20/15 **CANCELLED BY AUTHOR** 3/5/2015 - Ref to WPW	3/21/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-410	Minor	Obernolte (A)	**Administrative procedures** -- Would reqire all agencies to post on its web site any report required by law to submit to a committee of the Legislature. "Report" includes a study or audit, budget change proposal that has been approved by the Department of Finance and submitted to the Joint Legislative Budget Committee, the Assembly Committee on Budget, or the Senate Committee on Budget and Fiscal Review.	Add Section 9796 to the Government Code	5/22/15 - In Senate. First read 5/22/15 - 3rd read. Passed. (74-0.) 5/13/15 - Pass to Consent. (17-0) 4/29/15 - **PASS (9-0)** 4/28/15 - Re-ref to AAR 4/27/15 - Amend, 2nd read 4/06/15- Re-ref AAR 3/26/15- Amend,, 2nd read 03/26/15 Ref AAR		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-435	Major	Chang (A) Anderson (S)	**California Environmental Protection Agency: Natural Resources Agency: Web casts of public meetings and workshops** -- This bill would require that each department, board, and commission of the Natural Resources Agency and each department, board, and office of the California Environmental Protection Agency Web cast all onsite public meetings, in a manner that enables listeners and viewers to ask questions and provide public comment by telephone or email commensurate with those attending the meeting. The bill would require the agencies to make the recording of a webcast available for no less than 3 years.	Add Sections 12805.4 and 12812.4 to the Government Code	5/28/15 2nd read and amended. 5/28/15 **PASS as amended. (17-0)** 3/23/2015- **PASS (9-0)** 3/19/2015- Re-ref to AAR 3/2/2015 - Ref to AAR	3/25/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-498	None	Levine (A)	**Wildlife conservation: wildlife corridors** -- Would declare that it is the policy of the state to encourage wherever feasible and practicable voluntary steps to protect the functioning of wildlife corridors through various means, as applicable. Would provide that a project applicant may receive advance mitigation credits for investing in a mitigation that protects habitat connectivity for affected fish and wildlife resources.	Amend Sections 1797.5, 1930, and 1930.5 of the Fish and Game Code,	5/28/15 In Senate. RLS. for assignment. 5/28/15 3rd read. **PASS (52-24)** 5/22/15 3rd read and amended. 5/07/15 2nd read. Ordered to 3rd reading. 5/06/15 **Pass. (12-5)** 4/29/15 Re-ref to APPR 4/28/15 Amend, 2nd read. 4/14/15 Re-ref to APPR. 4/14/15 **PASS (8-5)** 4/09/15 Re-ref WPW 4/8/15 Amend, 2nd read 3/5/15 Ref to WPW		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-499	Major	Cooley (A)	**Archery season: concealed firearms** -- Would authorize a person with a valid license to carry a firearm capable of being concealed on the person, consistent with the terms of that license, while engaged in the taking of deer with bow and arrow as long as he or she does not take or attempt to take deer with the firearm.	Amend Section 4370 of the Fish and Game Code	5/14/15 Ref to NRW 5/4/15 To RLS for assignment. 5/4/15 3rd read. **Pass (78-2).** To Senate. 4/29/15 2nd read. To consent. 4/28/15 **Pass (15-0).** Consent Calendar 3/5/2015 - Ref to WPW	3/26/2015	
AB-559	None	Lopez (A)	**Monarch butterflies: conservation** -- Would authorize the department to take actions to conserve monarch butterflies and the unique habitats they depend upon for successful migration.	Add Section 1021 to the Fish and Game Code	5/14/15 Ref to NRW 4/30/15 To RLS. for assignment. 4/30/15 3rd read. Passed. To Senate 4/23/15 2nd read, to 3rd read 4/22/15 PASS (12-4) 4/14/15 Re-ref to APPR 4/14/15 PASS (10-4) 3/5/2015 - Ref to WPW		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-665	None	Frazier (A)	**Hunting or fishing: local regulation** -- Provides that unless authorized by the Fish and Game Code or other state or federal law, the commission and the department are the only entities that may adopt or promulgate regulations regarding the taking or possession of fish and game on any lands or waters within the state. Prohibits cities/counties from adopting an ordinance or regulation relating to the taking or possession of fish and game except for safety.	Amend Section 203.1 and add Sections 200.5 and 200.6 to, the Fish and Game Code	5/14/15 Ref to NRW 4/30/15 Senate -- To RLS. for assignment. 4/30/15 **3rd read. Pass (77-3).** 4/23/15 2nd read, to Consent 4/22/15 Consent, PASS (17-0) 4/15/15 Amend., 2nd read 4/14/15 Re-ref to APPR 4/14/15 Amed, PASS (15-0) 3/9/2015- Ref to WPW		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-731	None	Gallagher (A)	**Maintenance of the codes. --** This bill would make nonsubstantive changes in various provisions of law.	Amend Sections 1652, 1653, 1654, 1745.2, 12002, of the Fish and Game Code	5/07/15 Ref to JUD. 4/13/15 In Senate, Ref to RLS 4/13/15 3rd read, pass. 4/8/15 2nd read; To consent 4/7/15 **PASS (10-0)** 3/23/2015- Ref to JUD		
AB-797	Minor	Steinorth (A)	**Regulations: effective dates and legislative review** -- Would require the agency submit to the appropriate policy committee of each house of the Legislature for review a copy of each *major* regulation that it submits to the Secretary of State, and specifies that a regulation would not become effective if the Legislature passes an overriding statute.	Amend Sections 11343.4 and 11349.3 of the Government Code	5/14/15 Ref to GO 4/30/15 Senate -- To RLS. for assignment. **4/30/15 3rd read. Pass (77-3).** 4/23/15 2nd read, to Consent 4/22/15 Consent, PASS (17-0) 4/15/15 Re-ref to APPR 4/15/15 PASS (9-0) 4/07/15 Re-ref AAR. 4/06/15 Amend, 2nd read. 3/12/15 Ref to AAR	4/15/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-820	None.	Stone (A)	**Fish and shellfish: labeling and identification --** Would prohibit sale or offer for sale any fresh, frozen, or processed fish or shellfish intended for human consumption without clearly identifying at the point of sale whether the fish or shellfish was wild caught or farm raised, and other provisions. This bill would prohibit Pacific red snapper or butterfish from being used as an alternate name for rockfish or sablefish.	Add Section 8379 to the Fish and Game Code, and to add Sections 110796 and 114092 to the Health and Safety Code, relating to fish and shellfish.	4/23/15 Re-ref to AGRI 4/22/15 Amend, 2nd read 4/06/15 Re-ref AGRI. 3/26/15 Amend, 2nd read 3/26/15 Ref AGRI.	4/29/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB 1201	Minor	Salas (A)	**Sacramento-San Joaquin Delta: predation by nonnative species --** Would require the Department, by June 30, 2016, to develop and initiate a science-based approach that addresses predation by nonnative species upon species of fish listed pursuant to the act that reside all or a portion of their lives in the Sacramento-San Joaquin Delta.	Ass Section 6940 to Fish and Game Code	4/28/15 PASS (15-0). Re-ref to APPR. 4/23/15 Re-ref to WPW 4/22/15 Amend, 2nd read 4/06/15 Re-ref to WPW 3/26/15 Amend, 2nd read. 3/26/15 Ref WPW	4/28/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-1259	None	Levine (A)	**Relating to bees, and declaring the urgency thereof, to take effect immediately -** Would authorize Department to authorize the temporary placement of bee hives on department-managed wildlife areas through simple agreements specifying appropriate conditions.This bill would declare that it is to take effect immediately as an urgency statute.	Amend Section 1745.2 of the Fish and Game Code	5/28/15 Ref to AGRI 5/14/15 1st read. To RLS for assignment 5/14/15 3rd read. Urgency clause. Passed. 5/7/15 2nd read. To Consent. 5/6/15 PASS (17-0) 4/30/15 Re-ref APPR. 4/29/15 2nd read. 4/28/15 Re-ref to APPR to Consent 4/28/15 Amend, Pass (15-0)		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-1281	Major	Wilk (A)	**Regulations: legislative review** -- Whenever 25% of the Members of the Assembly or Senate transmit to the Governor their written declaration of opposition to a proposed regulation, would require a majority vote of the Assembly and Senate to adopt that regulation.	Add Section 11346.01 to the Government Code	4/9/2015 - Hearing cancelled by Author 3/23/2015- Ref to AAR and RLS		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-1325	None	Salas (A)	**Delta smelt** -- Would enact the Delta Smelt Preservation and Restoration Act of 2016 and require the department to develop a Delta smelt hatchery program to preserve and restore the Delta smelt. The bill would require the department to enter into mitigation banking agreements with banking partners for the purpose of providing take authorizations to banking partners and to obtain funding from banking agreements.	Add Chapter 7.1 (commencing with Section 1710) to Division 2 of the Fish and Game Code	3/23/2015- Ref to WPW		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-1398	??	Wilk (A) Berryhill (S)	**Environmental quality: the Sustainable Environmental Protection Act** -- Would enact the Sustainable Environmental Protection Act and would specify the environmental review required pursuant to CEQA for projects related to specified environmental topical areas. The bill would provide that the Sustainable Environmental Protection Act only applies if the lead agency or project applicant has agreed to provide to the public in a readily accessible electronic format an annual compliance report prepared pursuant to the mitigation monitoring and reporting program	Add Division 13.6 (commencing with Section 21200) to the Public Resources Code	3/23/2015- Ref to WPW		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-1427	None	Lackey (A)	**Fish and Game Commission: hearings** Would make a technical, nonsubstantive change to that provision.	Amend Section 309 of the Fish and Game Code	Pending referral		
AB-1498	None	Thurmond (A)	**Renewable energy resources: comprehensive planning and environmental compliance services** This bill would make a nonsubstantive change in those provisions.	Amend Section 705 of the Fish and Game Code	Pending referral		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-1527	Minor	Committee on Water, Parks, and Wildlife (A)	**Fish and wildlife** - Would apply provisions of code to both reptiles and amphibians. By applying certain provisions relative to the take and possession of certain animals to include both reptiles and amphibians, the violation of which would be a crime.	Amend various Sections, and to add Sections 80 and 89.5 to, the Fish and Game Code	5/28/15 Ref to NRW 5/14/15 1st read. To RLS for assignment 5/14/15 3rd read. Pass (78-0). To Senate 5/07/15 2nd read. To Consent. 5/06/15 Pass. (17-0). To Consent.. 4/28/15- Ref to APPR to Consent. 4/28/15- PASS (15-0) 3/26/15- Ref WPW	4/28/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AB-1528	None	Committee on Water, Parks, and Wildlife (A)	**Public resources** - This bill would make lace lichen (Ramalina menziesii) the official state lichen.	Add Section 424.6 to the Government Code, and to amend Sections 5003.6, 5008, 5008.5, 5071.7, 6232, 6311, 30411, and 30419 of, and to repeal Section 5044 of, the Public Resources Code	5/14/15 Ref to NRW 4/30/15 To RLS. for assignment. 04/30/15 3rd read. Passed. To Senate. 4/29/15- 2nd read. Ordered to 3rd read. 4/28/15- PASS (14-0) 03/26/15- Ref WPW	4/28/2015	

FISH AND GAME COMMISSION LEGISLATIVE TRACKING LOG 2015

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WPW = Water, Parks, Wildlife **RLS** = Rules **APPR** = Appropriations **GO** = Government Organization **AAR** = Accountability and Admin. Review
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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
AJR-4	None	Dodd (A)	**Berryessa Snow Mountain National Monument** -- Measure would urge the President of the United States and the Secretary of the United States Department of Interior to designate the area known as the Berryessa Snow Mountain region as the Berryessa Snow Mountain National Monument.		4/9/15 Chaptered 4/9/15 Enrolled 4/6/15 In Assembly 3/24/15 3rd reading **PASS (7-2)** 2/17/15- Ref to RLS 2/17/15- To Senate 2/17/15- **PASS (54-20)** 2/12/15- **PASS (10-4)** 2/4/15- Re-ref to WPW 2/3/15- Ref to WPW		
SB-17	None	Monning (S)	**California Sea Otter Fund** -- Would extend the operation of these provisions to January 1, 2021	Amend Section 18754.3 of the Revenue and Taxation Code	4/26/15 To Assembly 4/23/15 3rd read, **PASS (35-2)** 4/21/15 2nd read 4/20/15 PASS (6-1) 4/8/15 Re-refer APPR 4/8/15 **PASS (7-0)** 1/15/2015- Ref to GOVF	4/20/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-29	None	Beall (S)	**Peace officer training: mental health** -- Would require Peace Officer Standards and Training (POST) to require field training officers who are instructors for the field training program to have 40 hours of evidence-based behavioral health training, as specified. The bill would also require POST to require the field training program to include a 20-hour evidence-based behavioral health training course relating to law enforcement interaction with persons with mental illness or intellectual disability.	Add Sections 13515.28 and 13515.29 to the Penal Code	4/15/15 Re-ref to APPR, 2nd read 4/14/15 PASS (7-0) 3/23/2015- Re-ref PUBS 3/23/15 Amend, 2nd read 3/5/2015- Re-ref to PUBS 1/15/2015- Ref to RLS	4/7/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-122	Minor	Jackson (S) Hill (S)	**California Environmental Quality Act: record of proceedings** -- Would require the lead agency, at the request of a project applicant and consent of the lead agency, to prepare a record of proceedings concurrently with the preparation of a negative declaration, mitigated negative declaration, EIR, or other environmental document for projects.	Amend Sections 21082.1, 21091, 21159.9, and 21167.6 of, and to add Section 21167.6.2 to, the Public Resources Code	5/28/15 **PASS as amended. (5-2)** 4/20/15 2nd read, re-ref to APPR 4/16/15 **PASS (5-1)** 3/26/15- Amend., 2nd read 3/12/15- Re-ref to EQ 2/5/15- Ref to EQ	4/15/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-165	None	Monning (S)	**Production or cultivation of a controlled substance: civil penalties** -- Would impose various additional civil penalties, subject to these provisions, for violations of specified provisions of the Penal Code and the Public Resources Code, in connection with the production or cultivation of a controlled substance.	Amend Section 12025 of the Fish and Game Code	5/28/15 Ref PUBS and W., P., & W. 4/30/15 1st read. At Desk. 4/30/15 3rd read. Pass (36-0) 4/28/15 2nd read. To third reading. 4/27/15 To 2nd reading, Senate Rule 28.8. 4/14/15 2nd read, Re-ref to APPR 4/13/15 PASS (7-0) 3/12/2015- Re-ref to PUBS 2/19/2015- Ref to PUBS	4/7/2015	
SB-166	None	Gaines (S)	**California Environmental Quality Act** This bill would make technical, nonsubstantive changes to those provisions.	Amend Section 21000 of the Public Resources Code	2/19/2015- Ref to RLS		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-201	??	Wieckowski (S)	**California Public Records Act-** - Would require a court, in an action by a third party to enjoin disclosure of a public record or declaratory relief concerning a request to inspect a public record, to apply the provisions of the California Public Records Act as if the action had been initiated by a person requesting disclosure of a public record. The bill would also require the third party seeking an injunction or declaratory relief to provide notice to the person whose request prompted the action at the same time the defendant public agency in the action is served.	Add Section 6254.50 to the Government Code	2/19/2015- Ref to JUD		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-233	None	Hertzberg (S) Rendon (A)	**Marine resources and preservation.** -- Would require offshore oil applicants to apportion and transmit a portion of the cost savings to the department, the department to apportion those cost-savings fby prescribed schedule, require the Commission to serve as the lead agency for the environmental review under CEQA and take certain adverse impacts to air quality and greenhouse gas emissions into account.	Amend Sections 6603, 6604, 6610, 6611, 6612, 6613, 6614, 6615, 6616, and 6618 of the Fish and Game Code	4/26/15 **PASS (6-1)** 4/21/15 Re-ref to NRW 4/21/15 Amend, 2nd read 4/16/15 Set for hearing April 28. 4/14/15 Hearing canceled 3/19/2015 - Re-ref to NRW 2/26/2015- Ref to NRW	4/28/2015	
SB-234	None	Wolk (S) , Nielsen (S)	**Wildlife management areas: payments** -- Would appropriate $19,000,000 from the General Fund to the department to make payments to counties for unpaid amounts under these provisions.	Appropriations	2/26/2015- Ref to NRW	3/24/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-345	Major	Berryhill (S) Bigelow (A)	**The Sport Fishing Stimulus Act of 2015** -- Would authorize a charitable organization or nonprofit organization to possess fish taken under a sport fishing license in excess of a possession limit if the charitable organization or nonprofit organization was given the fish by a donor intermediary, and requires the commission to recommend legislation or adopt regulations to clarify when a possession limit is not violated by processing into food lawfully taken sport fish, also makes changes to junior sport fishing license age requirements and sport fishing license fees.	Amend Section 7120; amend, repeal, and add Sections 7149, 7149.05, and 7233; and, add Sections 7122 and 7233 to the Fish and Game Code	5/05/15 2nd read. Re-ref to APPR 5/04/15 **Pass (8-0)** 4/21/15 Set for hearing April 28. 4/16/15 Re-ref to NRW 4/06/15 2nd read. Re-ref to RLS.	5/18/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-414	Minor	Jackson (S)	**Marriage** -- Would replace references to a "husband" or "wife" with references to a "spouse," and would make other conforming and related changes.	Amend Section 8552.3 of the Fish and Game Code	4/16/15 In Assembly. 1st Read. 4/16/15 PASS 35-2. To Assembly. 4/16/15 Ordered to 3rd read 4/14/15 Amend., 2nd read. 4/13/15 PASS (7-0) 3/5/2015- Ref to JUD	4/7/2015	
SB-457	Major	Nielsen (S)	**Bobcat Protection Act of 2013** -- Would provide that identifiable features may include roads instead of major roads and provide that landmarks and geographic positions established by navigation and surveying methods may be used to delineate the boundaries of an area described above in which bobcat trapping is prohibited.	Amend Section 4155 of the Fish and Game Code	4/6/15 Re-ref to NRW 4/6/15 Amend., 2nd read 3/5/15 Ref to NRW		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-637	None	Allen (S)	**Relating to dredging -** Requires Department to issue a permit if it determines the use does not cause any significant effects on fish and wildlife, authorizes the Department to adjust the fee to cover all reasonable costs, prohibits the Department from issuing a permit until the permit application is deemed complete, as prescribed.	Amend Section 5653 of the Fish and Game Code, and add Section 13172.5 to the Water Code	05/05/15 2nd read 5/04/15 Re-refer to APPR. 4/29/15 PASS (5-2) 4/24/15 Set for hearing April 29. 04/22/15 2nd read. Re-ref to EQ 4/21/15 PASS (6-0).		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-718	None	Leno (S) Dodd (A)	**Hazardous Materials Response and Restoration Subaccount.** -- Would authorize up to $500,000 from the Oil Spill Response Trust Fund to the Hazardous Materials Response and Restoration Subaccount to reimburse organizations providing wildlife rescue and rehabilitation services for expenses incurred by rescue and rehabilitation. The bill would prohibit the administrator from making a loan if the total amount made from the loan has not been repaid exceeds	Add Section 8670.48.4 to the Government Code	5/11/15 Amended. 2nd read. Ref to APPR 5/06/15 2nd read. Re-ref to APPR. 5/05/15 Pass (6-1) 4/16/15 Re-ref to EQ 4/14/15 PASS (6-2) 4/07/15 Re-ref to NRW 4/06/15 Amend., 2nd read 3/19/15 Ref NRW	5/18/2015 4/14/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB 798	???	Committee on Natural Resources and Water (S)	**Water Natural resources** -- Would clarify that specified laws relating to administrative regulations and rulemaking do not apply to the sportfishing federal conforming action, make additional confimring changes, and delete other requirements,	Amend Sections 205.1, 714, 1050.8, 1053.5, 1055.1, 1056, 1059, 1764, 3050, 7149.2, 7149.3, 7150, 7860, 12002.2.1, 12153, and 13005 of, and to repeal Sections 1053, 1055, 1055.4, 1055.5, 1060, 1070, 3682, 3700, 6596, 7149, 7149.4, 7180 7181, 7182, 7183, 7184, and 7186 of, the Fish and Game Code, et al.	5/22/15 In Assembly. First read. At Desk. 5/22/15 3rd read. Passed on consent (38-0.) 05/18/15 Ordered to consent. 5/06/15 2nd read. Re-ref APPR. 5/05/15 Pass (8-0.). To consent. 4/22/15 Re-ref to NR 04/22/15 Amend, 2nd read 03/25/15 Ref to NR	4/28/2015	

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SB-805	Major	Committee on Natural Resources and Water (S)	**Natrual Resources --** Would clarify that laws relating to administrative regulations and rulemaking do not apply to sport fishing conformance tp federal regualtions, among other provisions.	Amend Sections 205.1, 714, 1050.8, 1053.5, 1055.1, 1056, 1059, 1764, 3050, 7149.2, 7149.3, 7150, 7860, 12002.2.1, 12153, and 13005 of, and to repeal Sections 1053, 1055, 1055.4, 1055.5, 1060, 1070, 3682, 3700, 6596, 7149, 7149.4, 7181, 7182, 7183, 7184, and 7186 of, the Fish and Game Code, to amend Section 113 of the Government Code, to amend Sections 741, 8301, and 30315 of, and to repeal Section 30310.5 of, the Public Resources Code	Pending referral		

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Bill No.	Impact	Authors	Title & General Purpose	Fish & Game Code/ Govt Code Sections	Bill Status	Hearing	Summary of FGC Action
SJR-3	None	McGuire (S)	**Smith River watershed protection** -- Would urge the President of the United States and Congress to permanently safeguard the currently unprotected North Fork of the Smith River watershed in Oregon from any mining activities that would have the potential impacts on water supplies, economies, or the environment in California's portion of the Smith River watershed.		4/09/15 Held at Desk. 4/09/15 **PASS (25-12)** To the Assembly 4/07/15 2nd read . 04/06/15 Amend. 3/24/15- **PASS (7-2)** 3/17/2015- Re-ref to NRW 2/5/2015- Ref to NRW	3/24/2015	

Department of Fish & Wildlife
Legislative Report
June 2015

(as of May 27, 2015)

AB 12 **(Cooley D) State government: administrative regulations: review.**

Introduced: 12/1/2014

Last Amend: 4/22/2015

Status: 5/13/2015-In committee: Set, first hearing. Referred to APPR. suspense file.

Location: 5/13/2015-A. APPR. SUSPENSE FILE

Summary: Current law authorizes various state entities to adopt, amend, or repeal regulations for various specified purposes. The Administrative Procedure Act requires the Office of Administrative Law and a state agency proposing to adopt, amend, or repeal a regulation to review the proposed changes for, among other things, consistency with existing state regulations. This bill would, until January 1, 2019, require each state agency to, on or before January 1, 2018, review that agency's regulations, identify any regulations that are duplicative, overlapping, inconsistent, or out of date, to revise those identified regulations, as provided, and report to the Legislature and Governor, as specified.

AB 56 **(Quirk D) Unmanned aircraft systems.**

Introduced: 12/2/2014

Last Amend: 4/22/2015

Status: 5/26/2015-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/26/2015-S. RLS.

Summary: Would generally prohibit public agencies from using unmanned aircraft systems, or contracting for the use of unmanned aircraft systems, as defined, with certain exceptions applicable to law enforcement agencies , subject to approval by the legislative body having management and control of the law enforcement agency and other specified conditions, and in certain other cases, including when the use or operation of the unmanned aircraft system achieves the core mission of the agency and the purpose is unrelated to the gathering of criminal intelligence, as defined. This bill contains other related provisions and other existing laws.

AB 78 **(Mathis R) Groundwater basins.**

Introduced: 1/5/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was PRINT on 1/5/2015)

Location: 5/15/2015-A. 2 YEAR

Summary: Current law requires the Department of Water Resources to categorize each basin or subbasin as high-, medium-, low-, or very low priority and to establish ground water the initial priority for each basin no later than January 31, 2015. This bill would make technical, nonsubstantive changes to this provision.

AB 92 **(Committee on Budget) Water.**

Introduced: 1/7/2015

Last Amend: 3/24/2015

Status: 3/27/2015-Chaptered by Secretary of State - Chapter No. 2

Location: 3/27/2015-A. CHAPTERED

Summary: Current law requires any new diversion of water from any stream having populations of salmon and steelhead that is determined by the Department of Fish and Wildlife to be deleterious to salmon and steelhead to be screened by the owner of the diversion. This bill would require the

department, within 30 days of providing written notice to the owner that the department has determined that the diversion is deleterious to salmon and steelhead, to submit to the owner its proposals as to measures necessary to protect the salmon and steelhead.

AB 96 **(Atkins D) Animal parts and products: importation or sale of ivory and rhinoceros horn.**

Introduced: 1/7/2015

Status: 3/25/2015-In committee: Set, first hearing. Referred to suspense file.

Location: 3/25/2015-A. APPR. SUSPENSE FILE

Summary: Current law exempts the possession with intent to sell, or sale of the dead body, or any part or product thereof, of any elephant before June 1, 1977, or the possession with intent to sell or the sale of any such item on or after June 1, 1977, if the item was imported before January 1, 1977. This bill would delete this exemption. By changing the definition of a crime, this bill would impose a state-mandated local program. This bill contains other related provisions and other existing laws.

AB 102 **(Rodriguez D) Railroad and surface transportation safety and emergency planning and response: hazardous materials.**

Introduced: 1/8/2015

Last Amend: 3/26/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was E.S. & T.M. on 4/28/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: Would create the Regional Railroad and Surface Transportation Accident Preparedness and Immediate Response Force in the Office of Emergency Services, consisting of specified representatives, and would designate this force as being responsible for providing regional and onsite response capabilities in the event of a release of hazardous materials from a rail car or a railroad accident involving a rail car or a hazardous materials release from a truck accident. This bill contains other related provisions and other existing laws.

AB 142 **(Bigelow R) Wild and scenic rivers: Mokelumne River.**

Introduced: 1/12/2015

Last Amend: 4/6/2015

Status: 4/15/2015-In committee: Set, first hearing. Referred to suspense file.

Location: 4/15/2015-A. APPR. SUSPENSE FILE

Summary: Would require the Secretary of the Natural Resources Agency, in a report analyzing the suitabliity or nonsuitability of a proposed designation of the Mokelumne River, its tributaries, or portions thereof as additions to the system, to consider the potential effects of the proposed designation on future water requirements, as specified, and the effects of climate change. This bill contains other related provisions.

AB 243 **(Wood D) Medical marijuana cultivation.**

Introduced: 2/5/2015

Last Amend: 4/22/2015

Status: 5/20/2015-In committee: Set, first hearing. Referred to APPR. suspense file.

Location: 5/20/2015-A. APPR. SUSPENSE FILE

Summary: Would generally require all persons who cultivate marijuana for medical purposes , except those cultivating for personal use, as specified, to obtain a permit to cultivate marijuana from the county , city, city and county, or from a state agency to be designated by the Governor if the county , city, or city and county chooses not to be the responsible entity for these purposes. The bill would allow the county , city, city and county, or state agency to charge a fee in an amount sufficient to cover the reasonable cost of issuing the permits and carrying out the program.

AB 290 **(Bigelow R) Game mammals: wild pig depredation.**

Introduced: 2/11/2015

Last Amend: 3/26/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was W.,P. & W. on 4/6/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: Current law defines the term "wild pig" for purposes of managing, taking, or hunting that species. The bill would also define "pigs" and prohibit the release of pigs into uncontrolled areas. The bill would provide that an area shall be deemed controlled if the pigs are regularly cared for and enclosed by a lawful fence, as defined. The bill would provide that an owner of a pig that escapes from a controlled area who has complied with this provision is not deemed to be in violation of any law that prohibits the release of any animal.

AB 298 **(Gonzalez D) Fish and wildlife: violations.**

Introduced: 2/12/2015

Status: 5/7/2015-Referred to Com. on N.R. & W.

Location: 5/7/2015-S. N.R. & W.

Summary: Current law generally makes any violation of the Fish and Game Code or any rule, regulation, or order made or adopted under the code a misdemeanor, and specifies that a violation of designated statutes or regulations is either an infraction or a misdemeanor. This bill would make a violation of a specified regulation relating to marine protected areas, marine managed areas, and special closures an infraction or a misdemeanor, except if the person who violates the regulation holds a commercial fishing license or a commercial passenger fishing boat license.

AB 300 **(Alejo D) Safe Water and Wildlife Protection Act of 2015.**

Introduced: 2/12/2015

Last Amend: 4/7/2015

Status: 4/22/2015-In committee: Set, first hearing. Referred to APPR. suspense file.

Location: 4/22/2015-A. APPR. SUSPENSE FILE

Summary: Would enact the Safe Water and Wildlife Protection Act of 2015, which would require the State Water Resources Control Board to establish and coordinate the Algal Bloom Task Force, comprised of specified representatives of state agencies, including the State Coastal Conservancy, in consultation with the Secretary for Environmental Protection, and would prescribe the composition and functions and duties of the task force.

AB 311 **(Gallagher R) Environmental quality: Water Quality, Supply, and Infrastructure Improvement Act of 2014.**

Introduced: 2/12/2015

Last Amend: 4/15/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was NAT. RES. on 4/28/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: Would require a public agency, in certifying an environmental impact report and in granting approvals for specified water storage projects funded, in whole or in part, by Proposition 1, to comply with specified procedures. Because a public agency would be required to comply with those new procedures, this bill would impose a state-mandated local program. The bill would authorize the public agency to concurrently prepare the record of proceedings for the project. This bill contains other related provisions and other existing laws.

AB 330 **(Chang R) State government.**

Introduced: 2/13/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was PRINT on 2/13/2015)

Location: 5/15/2015-A. 2 YEAR

Summary: Current law authorizes the Governor, from time to time, to examine the organization of all

agencies and to determine what changes are necessary to accomplish specified government goals, including, but not limited to, promotion of more effective management of the executive and administrative branch of state government. This bill would make technical, nonsubstantive changes to these provisions.

AB 353 **(Lackey R) Protected species: take: Bouquet Canyon: habitat restoration project.**

Introduced: 2/17/2015

Last Amend: 4/22/2015

Status: 5/14/2015-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/14/2015-S. RLS.

Summary: Would require the Department of Fish and Wildlife to authorize, under the California Endangered Species Act, the take of the unarmored threespine stickleback (Gasterosteus aculeatus williamsoni) resulting from impacts attributable to the habitat restoration project to restore and improve riparian habitat on public lands in the Bouquet Canyon area, and projects to restore the flow capacity to Bouquet Creek in Bouquet Canyon on public lands, as specified, if certain conditions are satisfied.

AB 367 **(Dodd D) Clear Lake.**

Introduced: 2/17/2015

Last Amend: 4/15/2015

Status: 4/22/2015-In committee: Set, first hearing. Referred to APPR. suspense file.

Location: 4/22/2015-A. APPR. SUSPENSE FILE

Summary: Would appropriate $2,400,000 from an unspecified fund to the County of Lake for the purposes of restoring Clear Lake wetlands, maintaining the water quality of Clear Lake, preventing the spread of invasive species to Clear Lake, and controlling and eradicating invasive species in Clear Lake. This bill contains other current laws.

AB 395 **(Gallagher R) Hunting: nonlead ammunition.**

Introduced: 2/18/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was W.,P. & W. on 3/5/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: Current las requires, as soon as is practicable, but by no later than July 1, 2019, the use of nonlead ammunition for the taking of all wildlife, including game mammals, game birds, nongame birds, and nongame mammals, with any firearm, and requires the Fish and Game Commission to promulgate regulations by July 1, 2015, that phase in the requirements of these provisions. This bill would repeal the restriction against the use of nonlead ammunition for the taking of all wildlife and related provisions.

AB 410 **(Obernolte R) Reports submitted to legislative committees.**

Introduced: 2/19/2015

Last Amend: 4/27/2015

Status: 5/22/2015-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/22/2015-S. RLS.

Summary: Would require a state agency to post on its Internet Web site any report it is required by law to submit to a committee of the Legislature. The bill would specify that a "report" includes a study or audit, or a budget change proposal that has been approved by the Department of Finance and submitted to the Joint Legislative Budget Committee, the Assembly Committee on Budget, or the Senate Committee on Budget and Fiscal Review.

AB 411 **(Lackey R) Public contracts.**

Introduced: 2/19/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was PRINT on 2/19/2015)

Location: 5/15/2015-A. 2 YEAR

Summary: Current law generally requires the Department of General Services to approve state agency contracts for the acquisition of goods and services. Current law defines several terms relating

to these contract acquisitions. This bill would make technical, nonsubstantive changes to the provision of law setting forth these definitions.

AB 435 **(Chang R) California Environmental Protection Agency: Natural Resources Agency: Web casts of public meetings and workshops.**

Introduced: 2/19/2015

Last Amend: 3/18/2015

Status: 4/15/2015-In committee: Set, first hearing. Referred to suspense file.

Location: 4/15/2015-A. APPR. SUSPENSE FILE

Summary: Would require that each department, board, and commission of the Natural Resources Agency and each department, board, and office of the California Environmental Protection Agency Web cast all public meetings and workshops, in a manner that enables listeners and viewers to ask questions and provide public comment by telephone or electronic communication commensurate with those attending the meeting or workshop. The bill would require the agencies to archive the recording of a Web cast for subsequent reasonable viewing by interested members of the public.

AB 498 **(Levine D) Wildlife conservation: wildlife corridors.**

Introduced: 2/23/2015

Last Amend: 5/22/2015

Status: 5/22/2015-Read third time and amended. Ordered to third reading.

Location: 5/22/2015-A. THIRD READING

Summary: Would declare that it is the policy of the state to encourage, wherever feasible and practicable, voluntary steps to protect the functioning of wildlife corridors through various means, as applicable. This bill contains other related provisions and other existing laws.

AB 499 **(Cooley D) Archery season: concealed firearms.**

Introduced: 2/23/2015

Status: 5/14/2015-Referred to Com. on N.R. & W.

Location: 5/14/2015-S. N.R. & W.

Summary: Current law generally prohibits a person taking or attempting to take deer during archery season from carrying, or having under his or her immediate control, a firearm of any kind, except for an active or honorably retired peace officer, as specified. This bill would authorize a person with a valid license to carry a firearm capable of being concealed on the person, consistent with the terms of that license, while engaged in the taking of deer with bow and arrow as long as he or she does not take or attempt to take deer with the firearm.

AB 501 **(Levine D) Resources: Delta research.**

Introduced: 2/23/2015

Last Amend: 4/22/2015

Status: 4/29/2015-In committee: Set, first hearing. Referred to APPR. suspense file.

Location: 4/29/2015-A. APPR. SUSPENSE FILE

Summary: Would require a person conducting Delta research, as defined, whose research is funded, in whole or in part, by the state, to take specified actions with regard to the sharing of the primary data, samples, physical collections, and other supporting materials created or gathered in the course of that research. The bill would make a researcher ineligible for state funding if the researcher does not substantially comply with these requirements within 6 months of completing the Delta research project, until the researcher complies with those requirements.

AB 559 **(Lopez D) Monarch butterflies: conservation.**

Introduced: 2/23/2015

Status: 5/14/2015-Referred to Com. on N.R. & W.

Location: 5/14/2015-S. N.R. & W.

Summary: Would authorize the Department of Fish and Wildlife to take actions to conserve monarch butterflies and the unique habitats they depend upon for successful migration. The bill would authorize

the department to partner with federal agencies, nonprofit organizations, academic programs, private landowners, and other entities that undertake actions to conserve monarch butterflies and aid their successful migration, including the Monarch Joint Venture.

AB 665 **(Frazier D) Hunting or fishing: local regulation.**

Introduced: 2/24/2015

Last Amend: 4/15/2015

Status: 5/14/2015-Referred to Com. on N.R. & W.

Location: 5/14/2015-S. N.R. & W.

Summary: Under current law, a city or county has no authority to regulate fish and game except that a city or county may adopt an ordinance that incidentally affects fishing and hunting for the protection of public health and safety. This bill would provide that the state fully occupies the field of the taking and possession of fish and game. The bill would provide that unless otherwise authorized by the Fish and Game Code, other state law, or federal law, the commission and the department are the only entities that may adopt or promulgate regulations regarding the taking or possession of fish and game on any lands or waters within the state

AB 794 **(Linder R) Criminal acts against law enforcement animals.**

Introduced: 2/25/2015

Last Amend: 4/8/2015

Status: 5/14/2015-Referred to Com. on PUB. S.

Location: 5/14/2015-S. PUB. S.

Summary: Would make specified criminal acts against law enforcement applicable when those acts are carried out against a horse or dog being used by, or under the supervision of, a volunteer who is acting under the direct supervision of a peace officer in the discharge or attempted discharge of his or her assigned volunteer duties. The bill would also require a defendant convicted of those acts to pay restitution for a horse or dog that is used by , or under the supervision of , a volunteer who is acting under the direct supervision of a peace officer, as specified.

AB 815 **(Ridley-Thomas D) Oil spill prevention and response fees: collection.**

Introduced: 2/26/2015

Status: 5/14/2015-Referred to Com. on N.R. & W.

Location: 5/14/2015-S. N.R. & W.

Summary: The Lempert-Keene-Seastrand Oil Spill Prevention and Response Act prohibits the oil spill prevention and administration fee from being collected by a marine terminal operator or refinery operator or imposed on the owner of crude oil or petroleum products if the fee has been previously collected or paid on the crude oil or petroleum products at another marine terminal or refinery and, in that case, requires a marine terminal operator, refinery operator, or owner of crude oil or petroleum products to demonstrate that the fee has already been paid. This bill instead would authorize a marine terminal operator or a refinery operator receiving petroleum products derived from crude oil refined in the state to presume the fee has been previously collected.

AB 820 **(Stone, Mark D) Fish and shellfish: labeling and identification.**

Introduced: 2/26/2015

Last Amend: 4/22/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was AGRI. on 4/23/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: Would provide that it is unlawful and constitutes misbranding to sell or offer for sale any fresh, frozen, or processed fish or shellfish intended for human consumption without clearly identifying at the point of sale whether the fish or shellfish was wild caught or farm raised. The bill would exempt a person who sells or offers for sale any fish or shellfish and acts in reasonable reliance on the fish or shellfish package labeling and product invoice from being found in violation of these requirements.

AB 956 **(Mathis R) California Environmental Quality Act: exemption.**

Introduced: 2/26/2015

Last Amend: 4/13/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was NAT. RES. on 4/28/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: The California Environmental Quality Act (CEQA) requires a lead agency to prepare a mitigated negative declaration for a project that may have a significant effect on the environment if revisions in the project would avoid or mitigate that effect and there is no substantial evidence that the project, as revised, would have a significant effect on the environment. This bill would exempt from the requirements of CEQA activities undertaken by a local agency in response to a drought that are necessary for water recycling projects that provide water for drinking and sanitation to specific individuals and communities.

AB 965 **(Garcia, Eduardo D) California and Mexico border: water resources improvement.**

Introduced: 2/26/2015

Last Amend: 5/4/2015

Status: 5/20/2015-In committee: Set, first hearing. Referred to APPR. suspense file.

Location: 5/20/2015-A. APPR. SUSPENSE FILE

Summary: Would require the California-Mexico Border Relations Council to establish the New River Water Quality, Public Health, and River Parkway Development Program to coordinate funding for, and the implementation of, recommendations from a strategic plan required to be developed by the council and certain projects identified by the council pursuant to existing law. This bill contains other related provisions and other existing laws.

AB 1201 **(Salas D) Fish and wildlife: Sacramento-San Joaquin Delta: predation by nonnative species.**

Introduced: 2/27/2015

Last Amend: 4/22/2015

Status: 5/6/2015-In committee: Set, first hearing. Referred to APPR. suspense file.

Location: 5/6/2015-A. APPR. SUSPENSE FILE

Summary: Under the California Endangered Species Act, the Department of Fish and Wildlife may authorize the take of listed species if the take is incidental to an otherwise lawful activity and the impacts are minimized and fully mitigated. This bill would require the department, by June 30, 2016, to develop and initiate a science-based approach that addresses predation by nonnative species upon species of fish listed pursuant to the act that reside all or a portion of their lives in the Sacramento-San Joaquin Delta.

AB 1244 **(Gray D) Water rights: small irrigation use.**

Introduced: 2/27/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was W.,P. & W. on 3/23/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: Current law authorizes any person to obtain a right to appropriate water for a small irrigation use upon registering the use with the State Water Resources Control Board and thereafter applying the water to reasonable and beneficial use with due diligence. This bill would require the board to adopt general conditions, in consultation with the Department of Food and Agriculture, the University of California Cooperative Extension, and others, including, but not limited to the Department of Fish and Wildlife, for small irrigation use, unless the board determines that sufficient funds are not available for that purpose.

AB 1251 **(Gomez D) Greenway Development and Sustainment Act.**

Introduced: 2/27/2015

Last Amend: 4/14/2015

Status: 4/29/2015-In committee: Set, first hearing. Referred to APPR. suspense file.

Location: 4/29/2015-A. APPR. SUSPENSE FILE

Summary: Would enact the Greenway Development and Sustainment Act and would authorize specified tax-exempt nonprofit organizations to acquire and hold a conservation easement if the organizations have as their primary purpose the development of a greenway, as defined. The bill would also include greenways in the definition of "open-space land" for local planning purposes. The bill would make findings with regard to the development of a greenway along the Los Angeles River and its tributaries and would declare that, by developing a greenway, a city, county, or city and county, may apply for funds from various sources.

AB 1259 **(Levine D) Bees: apiculture: state-owned lands.**

Introduced: 2/27/2015

Last Amend: 4/29/2015

Status: 5/14/2015-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/14/2015-S. RLS.

Summary: Current law requires the Department of Fish and Wildlife to consider permitting apiculture on department-managed wildlife areas. This bill would instead require the department to consider authorizing apiculture on department-managed wildlife areas. This bill contains other related provisions.

AB 1281 **(Wilk R) Regulations: legislative review.**

Introduced: 2/27/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was A. & A.R. on 3/23/2015)

Location: 5/15/2015-A. 2 YEAR

Summary: The Administrative Procedure Act governs the procedure for the adoption, amendment, or repeal of regulations by state agencies and for the review of those regulatory actions by the Office of Administrative Law. This bill, whenever 25% of the Members of the Assembly or Senate transmit to the Governor their written declaration of opposition to a proposed regulation, would require a majority vote of the Assembly and Senate to adopt that regulation.

AB 1312 **(O'Donnell D) Ballast water management.**

Introduced: 2/27/2015

Last Amend: 4/15/2015

Status: 5/21/2015-Referred to Coms. on N.R. & W. and E.Q.

Location: 5/21/2015-S. N.R. & W.

Summary: Would define the term "port" for purposes of the Marine Invasive Species Act to mean any port or place in which a vessel was, is, or will be anchored or moored, or where a vessel will transfer cargo. This bill contains other related provisions and other existing laws.

AB 1325 **(Salas D) Delta smelt.**

Introduced: 2/27/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was W.,P. & W. on 3/23/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: Would enact the Delta Smelt Preservation and Restoration Act of 2016. The act would require the Department of Fish and Wildlife to develop a Delta smelt hatchery program to preserve and restore the Delta smelt. The bill would require the department to enter into mitigation banking agreements with banking partners for the purpose of providing take authorizations to banking partners and to obtain funding from banking agreements. This bill contains other related provisions.

AB 1398 **(Wilk R) Environmental quality: the Sustainable Environmental Protection Act.**

Introduced: 2/27/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was NAT. RES. on 4/28/2015)

Location: 5/1/2015-A. 2 YEAR

Summary: Would enact the Sustainable Environmental Protection Act and would specify the environmental review required pursuant to CEQA for projects related to specified environmental topical areas. The bill would provide that the Sustainable Environmental Protection Act only applies if the lead agency or project applicant has agreed to provide to the public in a readily accessible electronic format an annual compliance report prepared pursuant to the mitigation monitoring and reporting program. This bill contains other related provisions and other existing laws.

AB 1420 **(Salas D) Oil and gas: pipelines.**

Introduced: 2/27/2015

Last Amend: 4/21/2015

Status: 5/22/2015-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/22/2015-S. RLS.

Summary: Current law requires the Division of Oil, Gas, and Geothermal Resources to prescribe minimum facility maintenance standards for oil and gas production facilities, including pipelines that are not under the jurisdiction of the State Fire Marshal. This bill would require the division to prioritize the identification and testing of those pipelines that are near sensitive areas.

AB 1427 **(Lackey R) Fish and Game Commission: hearings.**

Introduced: 2/27/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was PRINT on 2/27/2015)

Location: 5/15/2015-A. 2 YEAR

Summary: Current law authorizes the Fish and Game Commission, or any person appointed by the commission to conduct a hearing, to cause the deposition of witnesses, as prescribed, and to compel the attendance of witnesses and the production of documents and papers, in accordance with certain requirements. This bill would make a technical, nonsubstantive change to that provision.

AB 1473 **(Salas D) California Environmental Quality Act.**

Introduced: 2/27/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was PRINT on 2/27/2015)

Location: 5/15/2015-A. 2 YEAR

Summary: The California Environmental Quality Act requires a lead agency to prepare, or cause to be prepared, and certify the completion of an environmental impact report on a project, as defined, that it proposes to carry out or approve that may have a significant effect on the environment, as defined, or to adopt a negative declaration if it finds that the project will not have that effect. This bill would make technical, nonsubstantive changes to a provision within the act.

AB 1498 **(Thurmond D) Renewable energy resources: comprehensive planning and environmental compliance services.**

Introduced: 2/27/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was PRINT on 2/27/2015)

Location: 5/15/2015-A. 2 YEAR

Summary: Current law requires the Department of Fish and Wildlife to establish an internal division with the primary purpose of performing comprehensive planning and environmental compliance services with priority given to projects involving the building of eligible renewable energy resources, as defined. This bill would make a nonsubstantive change in those provisions.

AB 1527 **(Committee on Water, Parks, and Wildlife) Fish and wildlife.**

Introduced: 3/18/2015

Status: 5/14/2015-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/14/2015-S. RLS.

Summary: Current law requires the Fish and Game Code to be administered and enforced through regulations adopted by the Department of Fish and Wildlife, except as otherwise specifically provided by the code, or where the code requires the Fish and Game Commission to adopt regulations. This bill would make various nonsubstantive, minor substantive, and organizational changes to the code. The bill would provide that, unless the provision or context otherwise requires, a provision of the code that

applies to a whole animal also applies to a part of the animal. This bill contains other related provisions and other existing laws.

SB 17 **(Monning D) California Sea Otter Fund.**

Introduced: 12/1/2014

Status: 5/14/2015-Referred to Com. on REV. & TAX.

Location: 5/14/2015-A. REV. & TAX

Summary: Current law, on and after January 1, 2015, requires money in the California Sea Otter Fund, upon appropriation by the Legislature, to be allocated to the Department of Fish and Wildlife for the purposes of establishing a sea otter fund to be used for sea otter conservation, and to the State Coastal Conservancy for competitive grants and contracts for research, projects, and programs related to the Federal Sea Otter Recovery Plan or improving the nearshore ocean ecosystem. This bill would extend the operation of these provisions to January 1, 2021.

SB 127 **(Vidak R) Environmental quality: Water Quality, Supply, and Infrastructure Improvement Act of 2014.**

Introduced: 1/20/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was E.Q. on 2/5/2015)

Location: 5/1/2015-S. 2 YEAR

Summary: CEQA establishes a procedure by which a person may seek judicial review of the decision of the lead agency made pursuant to CEQA and a procedure for the preparation and certification of the record of proceedings upon the filing of an action or proceeding challenging a lead agency's action on the grounds of noncompliance with CEQA. This bill would require the public agency, in certifying the environmental impact report and in granting approvals for projects funded, in whole or in part, by Proposition 1, including the concurrent preparation of the record of proceedings and the certification of the record of proceeding within 5 days of the filing of a specified notice, to comply with specified procedures.

SB 165 **(Monning D) Production or cultivation of a controlled substance: civil penalties.**

Introduced: 2/4/2015

Last Amend: 4/14/2015

Status: 4/30/2015-In Assembly. Read first time. Held at Desk.

Location: 4/30/2015-A. DESK

Summary: Current law imposes various civil penalties for violations of specified provisions of the Fish and Game Code in connection with the production or cultivation of a controlled substance. Current law authorizes the Department of Fish and Wildlife to impose those civil penalties administratively. Current law authorizes the department to adopt regulations to implement these provisions and requires the administrative penalties collected to be apportioned in a specified manner. This bill would impose various additional civil penalties, subject to these provisions, for violations of specified provisions of the Penal Code and the Public Resources Code, in connection with the production or cultivation of a controlled substance.

SB 201 **(Wieckowski D) California Public Records Act.**

Introduced: 2/10/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was JUD. on 2/19/2015)

Location: 5/15/2015-S. 2 YEAR

Summary: Would require a court, in an action by a third party to enjoin disclosure of a public record or declaratory relief concerning a request to inspect a public record, to apply the provisions of the California Public Records Act as if the action had been initiated by a person requesting disclosure of a public record. The bill would also require the third party seeking an injunction or declaratory relief to provide notice to the person whose request prompted the action at the same time the defendant public agency in the action is served.

SB 207 **(Wieckowski D) California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund.**

Introduced: 2/11/2015

Last Amend: 3/24/2015

Status: 5/14/2015-Referred to Com. on NAT. RES.

Location: 5/14/2015-A. NAT. RES.

Summary: Current law requires a state agency expending moneys from the Greenhouse Gas Reduction Fund to create a record, prior to the expenditure, that includes, among other things, a description of the expenditure proposed to be made and a description of how the proposed expenditure will contribute to achieving and maintaining greenhouse gas emissions reductions, as specified. This bill would require that record to be posted on the Internet Web sites of the state agency and the State Air Resources Board prior to the state agency expending those moneys.

SB 226 **(Pavley D) Sustainable Groundwater Management Act: groundwater rights.**

Introduced: 2/13/2015

Last Amend: 5/5/2015

Status: 5/26/2015-In Assembly. Read first time. Held at Desk.

Location: 5/26/2015-A. DESK

Summary: The bill would provide that a court shall use the Code of Civil Procedure for determining rights to groundwater, except as provided by the special procedures established in the bill. This bill would require the process for determining rights to groundwater to be available to any court of competent jurisdiction. The bill would provide that it applies to Indian tribes and the federal government . The bill would require the boundaries of a basin to be as identified in Bulletin 118, unless other basin boundaries are established, as specified. This bill contains other existing laws and other provisions.

SB 233 **(Hertzberg D) Marine resources and preservation.**

Introduced: 2/13/2015

Last Amend: 4/21/2015

Status: 5/23/2015-Set for hearing May 28.

Location: 5/11/2015-S. APPR. SUSPENSE FILE

Summary: Would require an applicant, upon conditional approval for partial removal of an offshore oil structure, to transmit a portion of the cost savings to the Department of Fish and Wildlife, instead of to the specified entities and funds. The bill would require the department to apportion those cost-savings funds received from the applicant in accordance with a prescribed schedule. This bill contains other related provisions and other existing laws.

SB 234 **(Wolk D) Wildlife management areas: payments.**

Introduced: 2/13/2015

Status: 5/23/2015-Set for hearing May 28.

Location: 4/13/2015-S. APPR. SUSPENSE FILE

Summary: Current law requires the Department of Fish and Wildlife, when income is derived directly from real property acquired and operated by the state as a wildlife management area, as defined, to pay annually to the county in which the property is located an amount equal to the county taxes levied upon the property at the time title to the property was transferred to the state, and any assessments levied upon the property by any irrigation, drainage, or reclamation district. This bill would appropriate $19,000,000 from the General Fund to the department to make payments to counties for unpaid amounts under these provisions.

SB 317 **(De León D) The Safe Neighborhood Parks, Rivers, and Coastal Protection Bond Act of 2016.**

Introduced: 2/23/2015

Last Amend: 5/5/2015

Status: 5/23/2015-Set for hearing May 28.

Location: 5/18/2015-S. APPR. SUSPENSE FILE

Summary: Would enact the Safe Neighborhood Parks, Rivers, and Coastal Protection Bond Act of 2016, which, if adopted by the voters at the November 8, 2016, statewide general election, would authorize the issuance of bonds in the total amount of $2,450,000,000 pursuant to the State General Obligation Bond Law to finance a safe neighborhood parks, rivers, and coastal protection program.

This bill contains other related provisions.

SB 345 **(Berryhill R) The Sport Fishing Stimulus Act of 2015.**

Introduced: 2/24/2015

Last Amend: 5/5/2015

Status: 5/23/2015-Set for hearing May 28.

Location: 5/18/2015-S. APPR. SUSPENSE FILE

Summary: Would authorize a charitable organization or nonprofit organization to possess fish taken under a sport fishing license in excess of a possession limit established by statute or by regulations adopted by the Fish and Game Commission at any time if the charitable organization or nonprofit organization was given the fish by a donor intermediary, as defined, or a person who holds a sport fishing license and an applicable license tag or tags, the charitable organization or nonprofit organization has documentation to that effect, as specified, and the charitable organization or nonprofit organization retains any tag required to be affixed to a fish in the manner prescribed in the Fish and Game Code or regulations adopted by the commission.

SB 389 **(Berryhill R) Environmental quality: the Sustainable Environmental Protection Act.**

Introduced: 2/25/2015

Last Amend: 4/6/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was E.Q. on 4/16/2015)

Location: 5/1/2015-S. 2 YEAR

Summary: Would enact the Sustainable Environmental Protection Act and would specify the environmental review required pursuant to CEQA for projects related to specified environmental topical areas. For a judicial action or proceeding filed challenging an action taken by a lead agency on the ground of noncompliance with CEQA, the bill would prohibit a cause of action that (1) relates any topical area or criteria for which compliance obligations are identified or (2) challenges the environmental document if: (A) the environmental document discloses compliance with applicable environmental law, (B) the project conforms with the use designation, density, or building intensity in an applicable plan, as defined, and (C) the project approval incorporates applicable mitigation requirements into the environmental document. The bill would provide that the Sustainable Environmental Protection Act only applies if the lead agency or project applicant has agreed to provide to the public in a readily accessible electronic format an annual compliance report prepared pursuant to the mitigation monitoring and reporting program. This bill contains other related provisions and other existing laws.

SB 448 **(Galgiani D) Law enforcement: communications.**

Introduced: 2/25/2015

Last Amend: 4/15/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was PUB. S. on 4/15/2015)

Location: 5/15/2015-S. 2 YEAR

Summary: Current law establishes various prohibitions against eavesdropping and recording or intercepting certain communications. Current law provides that specified law enforcement officers are not prohibited by those provisions from overhearing or recording any communication that they could lawfully overhear or record prior to the enactment of those prohibitions. This bill would add uniformed peace officers of the Department of Fish and Wildlife, the Department of Parks and Recreation, the State Department of Developmental Services, and the State Department of State Hospitals, and a special agent of the Attorney General or any district attorney, to the list of law enforcement officers to whom the prohibitions described above do not apply.

SB 457 **(Nielsen R) Bobcat Protection Act of 2013.**

Introduced: 2/25/2015

Last Amend: 4/6/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was N.R. & W. on 4/14/2015)

Location: 5/1/2015-S. 2 YEAR

Summary: The Bobcat Protection Act of 2013 requires the Fish and Game Commission to delineate the boundaries of an area in which bobcat trapping is prohibited pursuant to specified provisions using readily identifiable features, such as highways or other major roads, such as those delineated for Joshua Tree National Park. This bill would provide that these features may include roads instead of major roads and would provide that landmarks and geographic positions established by navigation and surveying methods may be used to delineate the bo undaries of an area described above in which bobcat trapping is prohibited.

SB 615 **(Berryhill R) Waste discharge requirements: waivers: managed wetlands.**

Introduced: 2/27/2015

Last Amend: 4/6/2015

Status: 5/1/2015-Failed Deadline pursuant to Rule 61(a)(2). (Last location was E.Q. on 4/9/2015)

Location: 5/1/2015-S. 2 YEAR

Summary: Would require that managed wetlands be presumed to not pose a significant threat to water quality and would require, with respect to managed wetlands, the state board and regional boards to waive the above-described reporting requirements, regional board prescribed waste discharge requirements, and monitoring requirements of the waiver program, except that the state board or a regional board shall require water quality monitoring of a managed wetland not more than once during the duration of each waiver period unless results of downstream monitoring demonstrate a violation of water quality discharge standards. The bill would limit this monitoring to contaminants that are actually applied by wetland managers to the wetland and contaminants that are known to be naturally present in the wetland environment.

SB 617 **(Block D) Crimes.**

Introduced: 2/27/2015

Last Amend: 4/29/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was PUB. S. on 5/12/2015)

Location: 5/15/2015-S. 2 YEAR

Summary: Would , subject to exceptions, allow misdemeanors punishable by a maximum term of confinement not exceeding 6 months in jail to be charged as a misdemeanor or an infraction, in the discretion of the prosecuting attorney, as specified. The bill would, for a misdemeanor offense that is charged as an infraction under these provisions, make all statutory provisions of a misdemeanor offense, including fines or penalties, applicable to the infraction as if the offense were charged as a misdemeanor. The bill would prohibit a misdemeanor charged as an infraction pursuant to these provisions from being punished by imprisonment.

SB 637 **(Allen D) Suction dredge mining: permits.**

Introduced: 2/27/2015

Last Amend: 5/5/2015

Status: 5/23/2015-Set for hearing May 28.

Location: 5/18/2015-S. APPR. SUSPENSE FILE

Summary: Current law prohibits the use of any vacuum or suction dredge equipment by any person in any river, stream, or lake of this state without a permit issued by the Department of Fish and Wildlife. Current law requires the department to issue a permit, if the department determines that the use of a vacuum or suction dredge will not be deleterious to fish, upon the payment of a specified fee. This bill would instead require the department to issue a permit if the department determines that the use does not cause any significant effects on fish and wildlife and would authorize the department to adjust the specified fee to an amount sufficient to cover all reasonable costs of the department in regulating suction dredging activities.

SB 643 **(McGuire D) Medical marijuana.**

Introduced: 2/27/2015

Last Amend: 5/6/2015

Status: 5/23/2015-Set for hearing May 28.

Location: 5/18/2015-S. APPR. SUSPENSE FILE

Summary: Would establish within the Department of Consumer Affairs a Bureau of Medical Marijuana Regulation, under the supervision and control of the Chief of the Bureau of Medical Marijuana Regulation, and would require the bureau to license and regulate dispensing facilities, cultivation sites, transporters, and manufacturers of medical marijuana and medical marijuana products, subject to local ordinances. The bill would require a background check of applicants for licensure, as defined, to be administered by the Department of Justice, and submission of a statement signed by an applicant, under penalty of perjury, that the information on his or her application is true, thereby creating a crime and imposing a state-mandated local program.

SB 718 **(Leno D) Hazardous Materials Response and Restoration Subaccount.**

Introduced: 2/27/2015

Last Amend: 5/11/2015

Status: 5/23/2015-Set for hearing May 28.

Location: 5/18/2015-S. APPR. SUSPENSE FILE

Summary: Would authorize the administrator for oil spill response, upon making a specified finding, to loan moneys from the Oil Spill Response Trust Fund to the Hazardous Materials Response and Restoration Subaccount in an amount, not exceeding $500,000 annually, necessary to reimburse organizations providing wildlife rescue and rehabilitation services for expenses incurred by rescue and rehabilitation operations for wildlife injured by spill events of nonoil materials, thereby making an appropriation. The bill would prohibit the administrator from making a loan if the total amount of moneys made from these loans that has not been repaid exceeds $2,500,000.

SB 756 **(Stone R) California Environmental Quality Act.**

Introduced: 2/27/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was RLS. on 3/19/2015)

Location: 5/15/2015-S. 2 YEAR

Summary: Would state the intent of the Legislature to enact legislation to amend CEQA.

SB 772 **(Stone R) Bay Delta Conservation Plan: judicial review.**

Introduced: 2/27/2015

Status: 5/15/2015-Failed Deadline pursuant to Rule 61(a)(3). (Last location was RLS. on 3/19/2015)

Location: 5/15/2015-S. 2 YEAR

Summary: Current law imposes requirements on the Department of Water Resources in connection with the preparation of a Bay Delta Conservation Plan. This bill would state the intent of the Legislature to enact legislation establishing judicial review procedures for the Bay Delta Conservation Plan.

SB 788 **(McGuire D) California Coastal Protection Act of 2015.**

Introduced: 2/27/2015

Last Amend: 5/4/2015

Status: 5/23/2015-Set for hearing May 28.

Location: 5/18/2015-S. APPR. SUSPENSE FILE

Summary: The California Coastal Sanctuary Act of 1994 authorizes the State Lands Commission to enter into a lease for the extraction of oil or gas from state-owned tide and submerged lands in the California Coastal Sanctuary if the commission determines that the oil or gas deposits are being drained by means of producing wells upon adjacent federal lands and the lease is in the best interest of the state. This bill would enact the California Coastal Protection Act of 2015, which would delete this authorization. The bill would make related legislative findings and declarations.

SB 798 **(Committee on Natural Resources and Water) Natural resources.**

Introduced: 3/18/2015

Last Amend: 5/6/2015

Status: 5/22/2015-In Assembly. Read first time. Held at Desk.

Location: 5/22/2015-A. DESK

Summary: Current law authorizes the Fish and Game Commission to establish, by regulation, an automatic process to conform its sport fishing regulations to federal regulations. This bill would clarify that specified laws relating to administrative regulations and rulemaking do not apply to the conforming action implemented pursuant to the automatic process described above. This bill contains other related provisions and other current laws.

For more information call:

Susan LaGrande, CDFW Deputy Director at (916) 651-6719
Julie Oltmann, CDFW Legislative Representative at (916) 653-9772
Narisha Bonakdar, CDFW Legislative Coordinator at (916) 653-4183

You can also find legislative information on the web at http://leginfo.legislature.ca.gov/ and follow the prompts to legislation.

Study R-100 May 26, 2015

Memorandum 2015-20

Fish and Game Law: Draft Tentative Recommendation

The Commission[1] is presently studying the entire Fish and Game Code with the intention of proposing a complete recodification of that code.[2] Such work requires a comprehensive approach, treating the entire code as a whole. That generally precludes incremental enactment of the recodified law.

However, there are some beneficial changes to the existing code that can be made piecemeal, because they do not depend on reorganization of the entire code. At the February 2014 meeting, the Commission authorized the staff to prepare separate recommendations for the incremental enactment of such improvements.[3]

The Commission has previously approved the first of such recommendations.[4] A bill that would implement that recommendation is presently pending before the Legislature.[5] This memorandum presents a second draft tentative recommendation, proposing additional technical revisions and minor substantive improvements to the existing code.

The Commission should decide whether to approve the draft for circulation and public comment, with or without changes.

Respectfully submitted,

Steve Cohen
Staff Counsel

1. Any California Law Revision Commission document referred to in this memorandum can be obtained from the Commission. Recent materials can be downloaded from the Commission's website (www.clrc.ca.gov). Other materials can be obtained by contacting the Commission's staff, through the website or otherwise.

The Commission welcomes written comments at any time during its study process. Any comments received will be a part of the public record and may be considered at a public meeting. However, comments that are received less than five business days prior to a Commission meeting may be presented without staff analysis.

2. See Memorandum 2012-41.
3. See Minutes (Feb. 2014), p. 13.
4. See *Fish and Game Law: Technical Revisions and Minor Substantive Improvements (Part 1)*, 45 Cal. L. Revision Comm'n Reports 1 (2015); Minutes (Feb. 2015), p. 6.
5. AB 1527 (Committee on Water, Parks, and Wildlife).

#R-100

STATE OF CALIFORNIA

CALIFORNIA LAW REVISION COMMISSION

STAFF DRAFT

TENTATIVE RECOMMENDATION

Fish and Game Law: Technical Revisions and Minor Substantive Improvements (Part 2)

June 2015

The purpose of this tentative recommendation is to solicit public comment on the Commission's tentative conclusions. A comment submitted to the Commission will be part of the public record. The Commission may consider the comment at a public meeting when the Commission determines what, if any, recommendation it will make to the Legislature. It is just as important to advise the Commission that you approve the tentative recommendation as it is to advise the Commission that you believe revisions should be made to it.

COMMENTS ON THIS TENTATIVE RECOMMENDATION SHOULD BE RECEIVED BY THE COMMISSION NOT LATER THAN **September 1, 2015.**

The Commission will often substantially revise a proposal in response to comment it receives. Thus, this tentative recommendation is not necessarily the recommendation the Commission will submit to the Legislature.

California Law Revision Commission
4000 Middlefield Road, Room D-2
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<commission@clrc.ca.gov>

SUMMARY OF TENTATIVE RECOMMENDATION

The Law Revision Commission is preparing draft legislation to recodify the Fish and Game Code, in order to improve its organization and clarity, remove obsolete or redundant material, and correct technical errors. Because that work will involve the reorganization of the entire code, the recodification legislation will not be ready for presentation to the Legislature until the study is completed.

However, some beneficial changes can be made more quickly. As the larger study proceeds, the Law Revision Commission will make note of technical corrections and minor substantive improvements that can be made to the existing code, without waiting for completion of the entire study. Such improvements will be periodically compiled into recommendations for submission to the Legislature.

This tentative recommendation is the second such proposal. It proposes a largely nonsubstantive modernization and reorganization of provisions of the Fish and Game Code relating to the regulatory authority of the Fish and Game Commission.

This tentative recommendation was prepared pursuant to Resolution Chapter 63 of the Statutes of 2014.

FISH AND GAME LAW: TECHNICAL REVISIONS AND MINOR SUBSTANTIVE IMPROVEMENTS (PART 2)

BACKGROUND

In 2010, the Legislature directed the Natural Resources Agency to develop and submit a "strategic vision" for the Fish and Game Commission and what is now the Department of Fish and Wildlife.[1]

Among other things, the Strategic Vision report recommended that the Law Revision Commission review and recommend "clean-up" of the Fish and Game Code, to "(1) resolve inconsistencies; (2) eliminate redundancies; (3) eliminate unused and outdated code sections; (4) consolidate sections creating parallel systems and processes; and (5) restructure codes to group similar statutes…."[2]

Based on a draft of the Strategic Vision report, Senator Fran Pavley and Assembly Member Jared Huffman (then Chairs of the Senate Natural Resources and Water Committee and the Assembly Water, Parks, and Wildlife Committee) requested that the Law Revision Commission conduct a comprehensive review of the Fish and Game Code, and recommend changes to the Legislature that would "update, clarify, and improve" the code.[3]

Authority to conduct such a study was enacted by concurrent resolution in 2012:

> [The] Legislature approves for study by the California Law Revision Commission the new topic listed below:
>
> ….
>
> Whether the Fish and Game Code and related statutory law should be revised to improve its organization, clarify its meaning, resolve inconsistencies, eliminate unnecessary or obsolete provisions, standardize terminology, clarify program authority and funding sources, and make other minor improvements, without making any significant substantive change to the effect of the law[.][4]

Pursuant to that authority, the Law Revision Commission is analyzing the entire Fish and Game Code for the purpose of preparing recodification legislation that would improve the code's organization and clarity, remove obsolete or redundant material, and correct technical errors. Because that work will involve the reorganization of the entire code, the recodification legislation will not be ready for presentation to the Legislature until the study is completed.

However, some beneficial changes can be made more quickly. As the larger study proceeds, the Law Revision Commission has made note of minor

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1. 2010 Cal. Stat. ch. 424 (AB 2376 (Huffman)).

2. *California Fish & Wildlife Strategic Vision, Recommendations for Enhancing the State's Fish and Wildlife Management Agencies* (April 2012), p. A13, Law Revision Commission Staff Memorandum 2012–41, Exhibit p. 45.

3. Law Revision Commission Staff Memorandum 2012-5, Exhibit pp. 32-33.

4. 2012 Cal. Stat. res. ch. 108 (ACR 98 (Wagner)).

substantive improvements that can be made to the existing code without waiting for completion of the entire study. Such improvements will be periodically compiled into recommendations for submission to the Legislature.

The Law Revision Commission's first such recommendation[5] has been submitted to the Legislature, and a bill that would implement the recommendation is presently pending.[6] This tentative recommendation is the Law Revision Commission's second such proposal.

The revisions proposed in the tentative recommendation are summarized below.

REGULATION OF TAKE AND POSSESSION

One of the central functions of the Fish and Game Commission (hereafter, "Commission") is to adopt regulations governing the take and possession of wild animals. General authority to adopt such regulations is granted in Fish and Game Code Section 200, subject to certain express limitations.[7]

The article that contains Section 200 (hereafter, "Article 1") also contains a number of provisions that prescribe procedures for Commission rulemaking.[8]

Article 1 and most of the sections within it were enacted in 1957, as part of the last recodification of the Fish and Game Code.[9] Since that time, there have been significant changes in the law, which Article 1 has not been revised to properly reflect. Those changes include:

(1) The enactment of new provisions that authorize Commission regulation of take or possession in specific circumstances.

(2) Abandonment of the original procedure prescribed in Article 1 for Commission rulemaking.

(3) Enactment of the modern Administrative Procedure Act ("APA"),[10] which provides a uniform and comprehensive procedure for state agency rulemaking.

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5. *Fish and Game Law: Technical Revisions and Minor Substantive Improvements (Part 1)*, 45 Cal. L. Revision Comm'n Reports 1 (2015).

6. See AB 1527 (Committee on Water, Parks, and Wildlife).

7. See Fish & Game Code §§ 200 (commercial fishing), 201 (natural resources), 204(d) (spike bucks and spotted fawns).

8. See Fish & Game Code §§ 202 (exemptions from time periods in Administrative Procedure Act provisions), 203 and 205 (subject matter), 203.1 (required considerations), 206, 207, and 220(b) (meeting procedure), 210 and 211 (distribution of regulations), 215 (effective date of regulations), 218 (judicial review), 219 (effect on other code sections) 220(a) (effective time period of regulation).

9. 1957 Cal. Stat. ch. 456.

10. Chapter 3.5 (commencing with section 11340) of Part 1 of Division 3 of Title 2 of the Government Code. As a state agency, the Fish and Game Commission is required to comply with all applicable procedural provisions of the APA when promulgating regulations, unless expressly exempted by legislation enacted after 1947. Gov't Code § 11346; see also *Voss v. Superior Court*, 46 Cal. App. 4th 900, 909; 54

This tentative recommendation proposes to modernize Article 1 and related law, by conforming procedural rules to current practices, and by eliminating obsolete language and distinctions.

Generalized Application of Rulemaking Procedure

When Article 1 was first enacted in 1957, Section 200 provided nearly all of the authority for Commission regulation of take and possession. In accord with that fact, the procedural rules in Article 1 were largely drafted to apply to rulemaking "pursuant to this article" — i.e., pursuant to the article that contained Section 200. Consequently, the rulemaking procedures in Article 1 applied to every regulation adopted by the Commission under its general authority to regulate take and possession.

Since 1957, the Legislature has enacted a number of new code sections that authorize the Commission to regulate the take or possession of specific animals, or in specified circumstances. Those provisions have been located in the Fish and Game Code near the subjects to which they relate, and not in Article 1. For example, in 1986 the Legislature enacted Fish and Game Code Section 4902, authorizing the Commission to regulate Nelson Bighorn Sheep.[11] That provision is located in the Fish and Game Code among other provisions governing specific mammals, rather than in Article 1.

This placement of new rulemaking authority outside of Article 1 creates potential for confusion.

By their terms, the procedural provisions of Article 1 apply to rulemaking "pursuant to this article," i.e., pursuant to the general authority conferred by Section 200. So, when the Commission regulates Nelson Bighorn Sheep pursuant to Section 4902, is it subject to the procedural provisions in Article 1? A literal reading of the Article 1 provisions would suggest that it is not.

But Nelson Bighorn Sheep are mammals. As such, one could also argue that a regulation of Nelson Bighorn Sheep is concurrently authorized by Section 200. In which case, the regulation would be subject to the procedures in Article 1.

The Law Revision Commission sees no policy reason to distinguish between the regulation of wild animals generally, and the regulation of those same animals specifically, with regard to the rulemaking procedures provided in Article 1. To the contrary, it seems likely that the Legislature intended for the procedures in Article 1 to apply to nearly every Commission regulation of take or possession (as was the case when those procedural provisions were enacted). The later decisions to locate more specific grants of regulatory authority (like Section 4902) according to subject matter were likely driven only by organizational concerns, rather than

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Cal. Rptr. 2d 225 (1996). However, the APA specifies only a "floor" of regulatory procedure, and agencies may be subjected to additional regulatory responsibilities as the Legislature provides.

11. See, e.g., Fish & Game Code § 4902(a).

an intention to exclude those grants of authority from general rulemaking procedures.

The proposed legislation would therefore generalize the rulemaking procedures in Article 1 so that they would apply to all Commission regulations governing take or possession of wild animals, with one exception.[12] The procedures would not apply to matters that are expressly excluded from the general rulemaking authority provided in Section 200.[13] Those exclusions were enacted together with the rulemaking procedures, creating a strong inference that the Legislature intended to exclude those matters from the procedures that governed rulemaking under Section 200. Out of caution, the proposed legislation would not disturb that inference.

The Commission invites public comment on whether that is the correct result.

Modernization of Procedure for Conducting Rulemaking at Public Meetings

As originally enacted, Article 1 required the Commission to conduct its rulemaking according to a fixed calendar. At its January and February meetings it was to adopt regulations governing fish, amphibians, and reptiles, and at its April and May meetings regulations governing birds and mammals.[14]

Over time, that calendaring approach was abandoned and replaced with a more relaxed requirement that the Commission adopt regulations at a series of no fewer than three public meetings.[15] However, the procedure specified for the conduct of those meetings is fairly loose, and is not well-coordinated with existing requirements of the APA.

The proposed legislation would revise the existing meeting provision in Article 1 to make it fully consistent with the Commission's current practice and the requirements of the APA.[16]

The proposed legislation would also repeal Fish and Game Code Section 220(b). That provision gave the Commission flexibility to deviate from the former statutory rulemaking calendar based on new information presented in the interval between scheduled rulemaking meetings. With the abandonment of the calendared meetings, that flexibility is no longer required.

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12. See proposed Fish & Game Code § 250.

13. See note 7, *supra*.

14. See 1957 Cal. Stat. ch. 456, §§ 206-213.

15. See Fish & Game Code § 207.

16. See proposed Fish & Game Code § 255. See also Gov't Code §§ 11346.2, 11346.4, 11346.5, 11346.8, 11346.9.

Continuity of Regulations Adopted Pursuant to Section 200

When Article 1 was first enacted, it included Section 221. Section 221 was a "sunset provision," providing for the repeal of Article 1, by operation of law, on a specified date.[17]

To account for that possible repeal, Article 1 also contained Section 250.[18] Section 250 provides that in the event of a repeal of Article 1, any existing regulation that had been adopted pursuant to that article would remain in effect after the repeal.

In the years following the enactment of Article 1, Section 221 was repeatedly amended to extend its sunset date.[19] In 2001, Section 221 was finally repealed.[20] As a result, the Commission's general rulemaking authority under Article 1 is no longer subject to a sunset provision, and there is no need for the special continuity rule provided in Section 250.

The proposed legislation would therefore repeal Section 250.

Other Obsolete or Misplaced Provisions

The proposed legislation would also repeal or amend other Fish and Game Code provisions, to remove obsolete language and distinctions.[21] Other provisions would be relocated, to better reflect their function.[22]

Conforming Revisions

The proposed legislation would also make conforming revisions as necessary to accommodate the changes described above.[23]

EXTRAORDINARY RULEMAKING POWER

Fish and Game Code Section 219 authorizes the Commission to adopt a regulation that supersedes statutory law. This power applies in either of the following circumstances:

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17. See 1957 Cal. Stat. ch. 456, § 221.

18. See 1957 Cal. Stat. ch. 456, § 250.

19. See 1957 Cal. Stat. ch. 1549, 1959 Cal. Stat. ch. 1568, 1961 Cal. Stat. ch. 1245, 1963 (1st Ex. Sess.) Cal. Stat. ch. 7, 1965 Cal. Stat. ch. 748, 1969 Cal. Stat. ch. 110, 1973 Cal. Stat. ch. 723, 1975 Cal. Stat. ch. 1083, 1979 Cal. Stat. ch. 1076, 1984 Cal. Stat. ch. 229, 1989 Cal. Stat. ch. 564, 1994 Cal. Stat. ch. 935, 1999 Cal. Stat. ch. 483.

20. See 2001 Cal. Stat. ch. 398.

21. See proposed repeal of Fish & Game Code §§ 215, 218, and 300.

22. Fish and Game Code Section 206 would be relocated with other Fish and Game Commission organizational provisions, as Section 110. Fish and Game Code Sections 205.1, 217.5, and 217.6 would be relocated to a new article among other general sport fishing provisions. See proposed Fish & Game Code §§ 7110 and 7115.

23. See proposed revisions to Fish & Game Code §§ 460 and 7120, Gov't Code § 11343.4, and Health & Safety Code § 131052.

> (a) The regulation is necessary for the protection of fish, wildlife, and other natural resources under the jurisdiction of the commission.
>
> (b) The commission determines that an emergency exists or will exist unless the action is taken. An emergency exists if there is an immediate threat to the public health, safety, and welfare, or to the population or habitat of any species.[24]

To exercise the power, the Commission must designate the superseded statute by number in the regulation, and provide a written finding consistent with the standards set out above. A regulation adopted pursuant to Section 219 may remain in effect for no more than 12 months.[25]

The Law Revision Commission is not recommending any change to Section 219 at this time. **However, public comment on the legal and policy justification for the extraordinary power granted by Section 219 is invited.**

REQUEST FOR COMMENT

The Law Revision Commission requests public comment on all proposed revisions included in this tentative recommendation.

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24. Fish & Game Code § 219.

25. *Id*.

PROPOSED LEGISLATION

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PROPOSED LEGISLATION

FISH AND GAME CODE

Heading of Chapter 2 (commencing with Section 200) (amended)

SEC. ___. The heading of Chapter 2 of Division 1 of the Fish and Game Code is amended to read:

CHAPTER 2. ~~GENERAL REGULATORY POWERS~~ REGULATION OF TAKE AND POSSESSION GENERALLY

Heading of Article 1 (commencing with Section 200) (amended)

SEC. ___. The heading of Article 1 of Chapter 2 of Division 1 of the Fish and Game Code is amended to read:

Article 1. ~~Regulations~~ Authority

Fish & Game Code § 200 (amended). General authority

SEC. ___. Section 200 of the Fish and Game Code is amended to read:

200. (a) There is hereby delegated to the commission the power to regulate the taking or possession of birds, mammals, fish, ~~amphibia~~ amphibians, and reptiles ~~to the extent and in the manner prescribed in this article~~.

(b) No power is delegated to the commission by this ~~article~~ section to regulate ~~the~~ any of the following:

(1) The taking, possessing, processing, or use of fish, ~~amphibia~~ amphibians, kelp, or other aquatic plants for commercial purposes~~, and no provision of this code relating or applying thereto, nor any regulation of the commission made pursuant to such provision, shall be affected by this article or any regulation made under this article~~.

(2) Any natural resource or activity connected with a natural resource.

(3) The taking or possession of a spike buck or spotted fawn. "Spotted fawn" means a deer one year of age or less that has spotted pelage. "Spike buck" means a male deer with unbranched antlers on both sides that are more than three inches in length.

(c) This section and any regulations adopted pursuant to this section have no effect on any provision of this code or any regulation adopted pursuant to this code that relates to a matter described in paragraph (1) of subdivision (b).

Comment. Section 200 is amended to delete a reference to the "extent and manner" of regulations. Rules formerly located in this article have been repealed or relocated. See Sections 250-285 (procedure).

The section is also amended to add subdivision and paragraph designations, and make other nonsubstantive changes.

Subdivision (a) restates the first paragraph of Section 200.

Subdivision (b)(1) continues the first part of the second paragraph of Section 200 without substantive change.

Subdivision (b)(2) continues former Section 201 without substantive change.

Subdivision (b)(3) continues former Section 204(d) without substantive change.

Subdivision (c) restates the second part of the second paragraph of Section 200 without substantive change.

Fish & Game Code § 219 (unchanged). Superseding of statute

219. Any regulation adopted pursuant to this article may supersede any section of this code designated by number in the regulation, but shall do so only to the extent specifically provided in the regulation. A regulation which is adopted pursuant to this section shall be valid only to the extent that it makes additions, deletions, or changes to this code under one of the following circumstances:

(a) The regulation is necessary for the protection of fish, wildlife, and other natural resources under the jurisdiction of the commission.

(b) The commission determines that an emergency exists or will exist unless the action is taken. An emergency exists if there is an immediate threat to the public health, safety, and welfare, or to the population or habitat of any species.

A regulation which is adopted pursuant to this section shall be supported by written findings adopted by the commission at the time of the adoption of the regulation setting forth the basis for the regulation.

A regulation adopted pursuant to this section shall remain in effect for not more than 12 months from its effective date.

☞ **Note.** For the most part, this tentative recommendation proposes to generalize the rulemaking procedures that currently apply when the Fish and Game Commission regulates pursuant to the authority delegated by Section 200. The generalized procedures would apply to any regulation of take or possession of any bird, mammal, fish, amphibian, or reptile (with the exception of regulation of the matters excluded from Section 200).

This tentative recommendation does not propose to generalize Section 219 (which is set out above for reference purposes only). Section 219 purports to grant the Fish and Game Commission the extraordinary power to adopt regulations that supersede statutes. The Law Revision Commission has not yet reached any conclusion about the legal or policy merits of Section 219 and so is not prepared to recommend any amendment that would affect its scope of application.

The Law Revision Commission invites public comment on whether Section 219 should be generalized or otherwise reformed.

Fish & Game Code §§ 250-285 (added). Special rulemaking procedures

SEC. ___. Article 2 of Chapter 2 of Division 1 is added to the Fish and Game Code, to read:

Article 2. Procedure

§ 250. Application of article

250. (a) Except as provided in subdivision (b), this article applies to a commission regulation that governs the take or possession of any bird, mammal, fish, amphibian, or reptile.

(b) This article does not apply to a regulation on a matter described in subdivision (b) of Section 200.

(c) Except as expressly provided, this article does not supersede any other applicable law that governs the adoption, amendment, or repeal of a regulation.

Comment. Section 250 is new. It makes clear that this article applies to any Fish and Game Commission regulation that governs the take or possession of any bird, mammal, fish, amphibian, or reptile, except for a regulation that falls within the scope of Section 200(b). For example, rulemaking under Section 331 (take of antelope) is governed by this article, because it governs the take of a mammal and is not described by Section 200(b). By contrast, rulemaking under Section 8213 (sale of salmon) is not governed by this article, because regulation of the commercial take of fish is described by Section 200(b).

Subdivision (c) makes clear that, except as expressly indicated (see, e.g., Section 265), the rules in this article do not displace any other law that governs commission rulemaking. Other law may impose additional requirements, either in specific circumstances or generally. See, e.g., Sections 307 (animal scarcity), 325-327 (animal surplus); Gov't Code § 11340 *et seq*. (general state agency rulemaking procedure).

§ 255. General rulemaking procedure

255. (a) When adopting, amending, or repealing a regulation governed by this article, the commission shall conduct the following steps at separate public meetings:

(1) Approve the submission of a notice of proposed action to the Office of Administrative Law.

(2) Consider public comment on the proposed action. The department shall participate in this process by reviewing and responding to all public comment.

(3) Make a final decision on the proposed action.

(b) The meetings required by this section may be regular or special meetings.

(c) The meetings required by this section shall be duly noticed to the public in accordance with subdivision (c) of Section 110 and the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code).

(d) Within 45 days after the Commission makes a final decision to adopt, amend, or repeal a regulation governed by this article, the department shall publish and distribute the regulation to each county clerk, each district attorney, and each judge of the superior court in the state.

Comment. Subdivisions (a) through (c) of Section 255 restate and generalize the provisions of former Section 207(a)-(d) to conform to the rulemaking procedures of the Administrative Procedure Act. See Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code. Language requiring the Commission to "receive recommendations for

regulations" is obsolete and has not been continued. See Gov't Code § 11340.6 (public submission of rulemaking proposals).

Subdivision (d) combines and generalizes former Section 207(e) and 210(a).

§ 260. Distribution of regulations

260. (a) The commission and the department may do anything that is deemed necessary and proper to publicize and distribute a regulation governed by this article so that persons likely to be affected will be informed of them. The failure of the commission to provide any notice of a regulation governed by this article, beyond what is required by Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code, shall not impair the validity of the regulations.

(b) Notwithstanding any other provision of law, the commission and the department may contract with private entities to print regulations governed by this article, and other public information. The printing contract shall include criteria to ensure that the public information provided in the publication is easy to reference, read, and understand.

(c) Printing contracts authorized by this section for which no state funds are expended are not subject to Chapter 2 (commencing with Section 10290) of Part 2 of Division 2 of the Public Contract Code, except for Article 2 (commencing with Section 10295) of Chapter 2.

(d) Material printed pursuant to subdivision (b) that contains advertisements shall meet all specifications prescribed by the department. The printed material shall not contain advertisements for tobacco products, alcohol, firearms and devices prohibited pursuant to Section 32625 of the Penal Code, Article 2 (commencing with Section 30600) of Chapter 2 of Division 10 of Title 4 of Part 6 of the Penal Code, or any provision listed in Section 16590 of the Penal Code, or firearms not authorized by the commission as a legal method of sport-hunting, political statements, solicitations for membership in organizations, or any other statement, solicitation, or product advertisement that is in conflict with the purposes for which the material is produced, as determined by the commission.

(e) Neither the department nor the commission shall contract with private entities to print the materials described in subdivision (b) if the letting of those contracts will result in the elimination of civil service positions.

(f) The department or the license agent may give a copy of the current applicable published regulations governed by this article to each person issued a license, at the time the license is issued.

Comment. Section 260 restates former Sections 210(b)-(d) and 211.

§ 265. Exemption from time requirements

265. A regulation governed by this article is not subject to the time periods for the adoption, amendment, or repeal of a regulation prescribed in Sections 11343.4, 11346.4, 11346.8, and 11347.1 of the Government Code.

Comment. Section 265 generalizes the second sentence of former Section 202.

§ 270. Effective date of regulation

270. The adoption, amendment, or repeal of a regulation governed by this article shall become effective at the time specified in the regulation, but not sooner than the date of the filing.

Comment. Section 270 generalizes a part of former Section 215 (effective date of regulation).

§ 275. Effective period

275. A regulation governed by this article shall remain in effect for the period specified in the regulation or until superseded by subsequent regulation of the commission or by statute.

Comment. Section 275 generalizes former Section 220(a).

§ 280. Scope

280. A regulation governed by this article may apply to any or all areas, districts, or portions of areas or districts, at the discretion of the commission, and may do any or all of the following as to any or all species or subspecies:

(a) Establish, extend, shorten, or abolish open seasons and closed seasons.

(b) Establish, change, or abolish bag limits and possession limits.

(c) Establish and change areas or territorial limits for their taking.

(d) Prescribe the manner and the means of taking.

(e) Establish, change, or abolish restrictions based upon sex, maturity, or other physical distinctions.

Comment. Section 280 generalizes former Sections 203 and 205.

§ 285. Considerations

285. When adding, amending, or repealing a regulation governed by this article, the commission shall consider populations, habitat, food supplies, the welfare of individual animals, and other pertinent facts and testimony.

Comment. Section 285 generalizes former Section 203.1.

CONFORMING REVISIONS

Fish & Game Code § 110 (added). Meetings

SEC. ___. Section 110 is added to the Fish and Game Code, to read:

110. (a) The commission shall hold no fewer than eight regular meetings per calendar year, if the commission has adequate funding for related travel, including funding for department travel. The commission may also hold special meetings or hearings to receive additional input from the department and the public.

(b) The commission shall announce the dates and locations of meetings for the year by January 1 of that year, or 60 days prior to the first meeting, whichever

comes first. Meeting locations shall be accessible to the public and located throughout the state. To the extent feasible, meetings shall be held in state facilities. In setting the dates and locations for regular meetings, the commission shall also consider the following factors:

(1) Recommendations of the department.

(2) Opening and closing dates of fishing and hunting seasons.

(3) The schedules of other state and federal regulatory agencies whose regulations affect the management of fish and wildlife of this state.

(c) The commission shall cause the notice of the schedule for regular meetings, and notice of any change in the date and location of a meeting, to be disseminated to the public in a manner that will result in broad dissemination and that complies with the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code).

Comment. Section 110 continues former Section 206 without change.

Fish & Game Code § 201 (repealed). No regulation of natural resources

SEC. ___. Section 201 of the Fish and Game Code is repealed.

~~201. Nothing in this article confers upon the commission any power to regulate any natural resources or commercial or other activity connected therewith, except as specifically provided.~~

Comment. Former Section 201 is continued by Section 200(c).

Fish & Game Code § 202 (repealed). Procedure

SEC. ___. Section 202 of the Fish and Game Code is repealed.

~~202. The commission shall exercise its powers under this article by regulations made and promulgated pursuant to this article. Regulations adopted pursuant to this article shall not be subject to the time periods for the adoption, amendment, or repeal of regulations prescribed in Sections 11343.4, 11346.4, 11346.8, and 11347.1 of the Government Code.~~

Comment. The second sentence of former Section 202 is continued by Section 265.

Fish & Game Code § 203 (repealed). Scope of regulation

SEC. ___. Section 203 of the Fish and Game Code is repealed.

~~203. Any regulation of the commission pursuant to this article relating to resident game birds, game mammals and, fur bearing mammals may apply to all or any areas, districts, or portions thereof, at the discretion of the commission, and may do any or all of the following as to any or all species or subspecies:~~

~~(a) Establish, extend, shorten, or abolish open seasons and closed seasons.~~

~~(b) Establish, change, or abolish bag limits and possession limits.~~

~~(c) Establish and change areas or territorial limits for their taking.~~

~~(d) Prescribe the manner and the means of taking.~~

~~(e) Establish, change, or abolish restrictions based upon sex, maturity, or other physical distinctions.~~

Comment. Former Section 203 is continued by Section 280.

Fish & Game Code § 203.1 (repealed). Considerations

SEC. ___. Section 203.1 of the Fish and Game Code is repealed.

~~203.1. When adopting regulations pursuant to Section 203, the commission shall consider populations, habitat, food supplies, the welfare of individual animals, and other pertinent facts and testimony.~~

Comment. Former Section 203.1 is continued by Section 285.

Fish & Game Code § 204 (amended). Limitation of authority

SEC. ___. Section 204 of the Fish and Game Code is repealed.

~~204. The commission has no power under this article to make any regulation authorizing or permitting the taking of:~~

~~(a) Any bird or mammal in any refuge heretofore or hereafter established by statute, the taking or possession of which shall be regulated pursuant to Sections 10500 to 10506, inclusive.~~

~~(b) Elk, the taking or possession of which shall be regulated pursuant to Section 332.~~

~~(c) Antelope, the taking or possession of which shall be regulated pursuant to Section 331.~~

~~(d) Any a spike buck or spotted fawn. "Spotted fawn" means a young deer born that year which has spotted pelage. "Spike buck" means a male deer with unbranched antlers on both sides which are more than three inches in length.~~

~~Any regulation establishing a season to compensate for closure of an area due to extreme fire hazard shall be made pursuant to Section 306.~~

~~Any regulation setting a special hunting season for mammals, except deer, or game birds which have increased in number to such an extent that a surplus exists or which are damaging property or are overgrazing their range shall be made pursuant to Section 325~~.

Comment. Former Section 204(d) is continued by Section 200(b)(3). The remainder of former Section 204 is superfluous and is not continued. See Sections 306, 325, 331, 332, and 10500 to 10506.

Fish & Game Code § 205 (repealed). Scope of regulations

SEC. ___. Section 205 of the Fish and Game Code is repealed.

~~205. Any regulation of the commission pursuant to this article which relates to fish, amphibia, and reptiles, may apply to all or any areas, districts, or portion thereof, at the discretion of the commission, and may do any or all of the following as to any or all species or subspecies:~~

~~(a) Establish, extend, shorten, or abolish open seasons and closed seasons.~~

~~(b) Establish, change, or abolish bag limits, possession limits, and size limits.~~

~~(c) Establish and change areas or territorial limits for their taking.~~

~~(d) Prescribe the manner and the means of taking.~~

Comment. Former Section 205 is continued by Section 280.

Fish & Game Code § 205.1 (repealed). Automatic process to conform sport fishing regulations

SEC. ___. Section 205.1 of the Fish and Game Code is repealed.

~~205.1. (a) The commission may establish by regulation an automatic process to conform its sport fishing regulations to federal regulations.~~

~~(b) The department shall provide public notice of any conforming action implemented pursuant to this section.~~

Comment. Former Section 205.1 is continued by Section 7110.

Fish & Game Code § 206 (repealed). Meetings

SEC. ___. Section 206 of the Fish and Game Code is repealed.

~~206. (a) The commission shall hold no fewer than eight regular meetings per calendar year, if the commission has adequate funding for related travel, including funding for department travel. The commission may also hold special meetings or hearings to receive additional input from the department and the public.~~

~~(b) The commission shall announce the dates and locations of meetings for the year by January 1 of that year, or 60 days prior to the first meeting, whichever comes first. Meeting locations shall be accessible to the public and located throughout the state. To the extent feasible, meetings shall be held in state facilities. In setting the dates and locations for regular meetings, the commission shall also consider the following factors:~~

~~(1) Recommendations of the department.~~

~~(2) Opening and closing dates of fishing and hunting seasons.~~

~~(3) The schedules of other state and federal regulatory agencies whose regulations affect the management of fish and wildlife of this state.~~

~~(c) The commission shall cause the notice of the schedule for regular meetings, and notice of any change in the date and location of a meeting, to be disseminated to the public in a manner that will result in broad dissemination and that complies with the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code).~~

Comment. Former Section 206 is continued without change by Section 110.

Fish & Game Code § 207 (repealed). General rulemaking procedure

SEC. ___. Section 207 of the Fish and Game Code is repealed.

~~207. (a) Except for emergency regulations, the commission shall consider and adopt regulations pursuant to Sections 203 and 205 at a series of no fewer than three meetings. These meetings may be regular or special meetings that are duly noticed to the public in accordance with subdivision (c) of Section 206 and the Administrative Procedure Act (Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code).~~

~~(b) At the first meeting, the commission shall receive recommendations for regulations from its own members and staff, the department, other public agencies, and the public.~~

~~(c) At the second meeting, the commission shall devote time for open public discussion of proposed regulations presented at the first meeting. The department shall participate in this discussion by reviewing and presenting its findings regarding each regulation proposed by the public and by responding to objections raised pertaining to its proposed regulations. After considering the public discussion, the commission shall announce, prior to adjournment of the meeting, the regulations it intends to add, amend, or repeal.~~

~~(d) At the third meeting, the commission may choose to hear additional public discussion regarding the regulations it intends to adopt. At the meeting, the commission shall add, amend, or repeal regulations relating to any recommendation received at the initial meeting it deems necessary to preserve, properly utilize, and maintain each species or subspecies.~~

~~(e) Within 45 days after adoption, the department shall publish and distribute regulations adopted pursuant to this section.~~

Comment. Former Section 207 is generally restated in Section 255.

Fish & Game Code § 210 (repealed). Distribution of regulations

SEC. ___. Section 210 of the Fish and Game Code is repealed.

~~210. (a) The commission shall provide copies of the regulations added, amended, or repealed pursuant to subdivision (e) of Section 206, subdivision (e) of Section 207, and subdivision (d) of Section 208 to each county clerk, each district attorney, and each judge of the superior court in the state.~~

~~(b) The commission and the department may do anything that is deemed necessary and proper to publicize and distribute regulations so that persons likely to be affected will be informed of them. The failure of the commission to provide any notice of its regulations, other than by filing them in accordance with Section 215, shall not impair the validity of the regulations.~~

~~(c) The department or the license agent may give a copy of the current applicable published regulations to each person issued a license at the time the license is issued.~~

~~(d) Notwithstanding any other provision of law, the commission and the department may contract with private entities to print regulations and other regulatory and public information. Printing contracts authorized by this subdivision and for which no state funds are expended are not subject to Chapter 2 (commencing with Section 10290) of Part 2 of Division 2 of the Public Contract Code, except for Article 2 (commencing with Section 10295) of Chapter 2.~~

Comment. Former Section 210(a) is continued by Section 255(d).
Former Section 210(b)-(d) is continued by Section 260.

Fish & Game Code § 211 (repealed). Printing of regulations

SEC. ___. Section 211 of the Fish and Game Code is repealed.

~~211. (a) Material printed pursuant to subdivision (d) of Section 210 that contains advertisements shall meet all specifications prescribed by the department. The~~

~~printed material shall not contain advertisements for tobacco products, alcohol, firearms and devices prohibited pursuant to Section 32625 of the Penal Code, Article 2 (commencing with Section 30600) of Chapter 2 of Division 10 of Title 4 of Part 6 of the Penal Code, or any provision listed in Section 16590 of the Penal Code, or firearms not authorized by the commission as a legal method of sport hunting, political statements, solicitations for membership in organizations, or any other statement, solicitation, or product advertisement that is in conflict with the purposes for which the material is produced, as determined by the commission. The printing contract shall include criteria to ensure that the public information provided in the publication is easy to reference, read, and understand.~~

~~(b) Neither the department nor the commission shall contract with private entities to print the materials described in subdivision (d) of Section 210 if the letting of those contracts will result in the elimination of civil service positions.~~

Comment. Former Section 211 is continued by Section 260.

Fish & Game Code § 215 (repealed). Filing of regulations

SEC. ___. Section 215 of the Fish and Game Code is repealed.

~~215. Every regulation of the commission made pursuant to this article shall be filed with the Secretary of State, and shall become effective at the time specified therein, but not sooner than the date of the filing.~~

Comment. The second clause of former Section 215 (effective date of regulation) is continued by Section 270.

The first clause of former Section 215 (required filing of regulation with Secretary of State) is superfluous and not continued. See Gov't Code § 11343.

Fish & Game Code § 217.5 (repealed). Persons with disabilities

SEC. ___. Section 215 of the Fish and Game Code is repealed.

~~217.5. (a) The department shall identify property it owns or manages that includes areas for sport fishing which are accessible to disabled persons.~~

~~(b) Commencing with the booklet of sport fishing regulations published by the commission in 1986, the availability of sport fishing areas, identified by the department as accessible to disabled persons under subdivision (a), shall be noted in the booklet of regulations, together with telephone numbers and instructions for obtaining a list of those areas from regional department offices.~~

Comment. Former Section 217.5 is continued by Section 7115(a)-(b).

Fish & Game Code § 217.6 (repealed). Human health advisories

SEC. ___. Section 215 of the Fish and Game Code is repealed.

~~217.6. Commencing with the booklet of sportfishing regulations published in 1987, the booklet shall also contain any human health advisories relating to fish which are formally issued by the State Department of Health Services or summaries of those human health advisories. The summaries shall be prepared in consultation with the State Department of Health Services.~~

Comment. Former Section 217.6 is continued by Section 7115(c).

Fish & Game Code § 218 (repealed). Judicial review

~~218. Any regulation of the commission made pursuant to this article shall be subject to review in accordance with law by any court of competent jurisdiction.~~

Comment. Former Section 218 is obsolete and is not continued. See Gov't Code § 11350.

Fish & Game Code § 220 (repealed). Special rules

SEC. ___. Section 220 of the Fish and Game Code is repealed.

~~220. (a) Any regulation of the commission added or amended pursuant to this article shall remain in effect for the period specified therein or until superseded by subsequent regulation of the commission or by statute.~~

~~(b) Notwithstanding this article, the commission may add, amend, or repeal regulations at any regular or special meeting if facts are presented to the commission which were not presented at the time the original regulations were adopted and if the commission determines that those regulations added, amended, or repealed are necessary to provide proper utilization, protection, or conservation of fish and wildlife species or subspecies.~~

Comment. Former Section 220(a) is continued without substantive change by Section 275. Former Section 220(b) is obsolete and is not continued.

Fish & Game Code § 240 (repealed). Emergency regulations

SEC. ___. Article 1.5 of Chapter 2 of Division 1 of the Fish & Game Code is repealed.

Comment. Former Section 240 is continued by Section 399.

Fish & Game Code § 250 (repealed). Continuance of regulations

SEC. ___. Article 2 of Chapter 2 of Division 1 of the Fish & Game Code is repealed.

Comment. Former Section 250 is repealed as obsolete. Section 250 was originally enacted when the Fish and Game Commission's authority to regulate the take and possession of wildlife was subject to a series of sunset provisions set forth in Section 221. See 1957 Cal. Stat. ch. 456, 1957 Cal. Stat. ch. 1549, 1959 Cal. Stat. ch. 1568, 1961 Cal. Stat. ch. 1245, 1963 (1st Ex. Sess.) Cal. Stat. ch. 7, 1965 Cal. Stat. ch. 748, 1969 Cal. Stat. ch. 110, 1973 Cal. Stat. ch. 723, 1975 Cal. Stat. ch. 1083, 1979 Cal. Stat. ch. 1076, 1984 Cal. Stat. ch. 229, 1994 Cal. Stat. ch. 935, 1999 Cal. Stat. ch. 483.

The purpose of Section 250 was to provide for the continuity of adopted regulations in the event that the Fish and Game Commission's rulemaking authority were to be repealed by operation of law. That possibility is no longer a concern, as Section 221 was itself repealed in 2001. See 2001 Cal. Stat. ch. 398.

Fish & Game Code § 300 (repealed). Filing with Secretary of State

SEC. ___. Section 300 of the Fish and Game Code is repealed.

~~300. Any regulation issued under any subsequent provisions of this code shall be filed with the Secretary of State, as required by Chapter 4 (commencing with Section 11370), Part 1, Division 3, Title 2, of the Government Code.~~

Comment. Former Section 300 is superfluous and is not continued. See Gov't Code § 11343.

Fish & Game Code § 399 (added). Emergency regulations

SEC. ___. Chapter 3.5 is added to Division 1 of the Fish and Game Code, to read:

CHAPTER 3.5. EMERGENCY REGULATIONS

§ 399. Emergency regulations

399. Notwithstanding any other provision of this code, the commission, when adopting, amending, or repealing a regulation pursuant to authority vested in it by this code, may, after at least one hearing, adopt, amend, or repeal that regulation pursuant to Section 11346.1 of the Government Code, if it makes either of the following findings:

(a) That the adoption, amendment, or repeal is necessary for the immediate conservation, preservation, or protection of birds, mammals, fish, amphibians, or reptiles, including, but not limited to, their nests or eggs.

(b) That the adoption, amendment, or repeal is necessary for the immediate preservation of the public peace, health and safety, or general welfare.

Comment. Section 399 restates former Section 240(a) without substantive change, except to add a reference to amphibians.

Former Section 240(b) is redundant and is not continued. See Gov't Code Sections 11346.1(a)(1) & 11349.6 (review of proposed emergency regulation).

Fish & Game Code § 460 (amended). Recommendations relating to deer

SEC. ___. Section 460 of the Fish and Game Code is amended to read:

460. Prior to ~~the February~~ each meeting of the commission ~~as required in~~ at which the commission considers the regulation of deer and takes action pursuant to paragraph (1) of subdivision (a) of Section ~~207~~ 255, the department shall recommend to the commission those deer herd units to be placed under a general deer hunting season. At the same time, the department shall recommend to the commission, subject to the provisions of Sections 458 and 459, whether any antlerless deer should be taken and in what deer herd units antlerless deer are to be taken. If in the judgment of the department there are deer herd units in which hunting pressure would adversely affect the deer herd, impair the hunting experience, or endanger the public safety, the department shall also recommend to the commission those deer herd units where hunter numbers should be restricted and which should be removed from the general deer hunting season designation. The department shall inform the commission of the condition of each deer herd unit. Upon receipt of the recommendations and information required in this section, the commission shall make that material known to the public and its determinations regarding proposed regulations. The recommendations of the department shall, in accordance with the provisions of Sections 458 and 459, include the number, if any, of antlerless deer that should be taken in deer herd

units, whether the permits should be either-sex permits, the proposed dates for the taking, and the number of permits proposed for each deer herd unit. At the same time, the department shall recommend the establishment of any hunter-restricted quota units, if needed, and the number of the quota and manner in which the quota permits should be issued.

Comment. Section 460 is amended to correct an obsolete cross-reference.

Fish & Game Code §§ 7110-7115 (added). Sport fishing regulations

SEC. ___. Article 1.5 is added to Chapter 1 of Part 2 of Division 6 of the Fish & Game Code, to read:

Article 1.5. Sport Fishing Regulations

§ 7110. Automatic process to conform sport fishing regulations

7110. (a) The commission may establish by regulation an automatic process to conform its sport fishing regulations to federal regulations.

(b) The department shall provide public notice of any conforming action implemented pursuant to this section.

Comment. Section 7110 continues former Section 205.1 without change.

§ 7115. Required information in regulation booklet

7115. (a) The department shall identify property it owns or manages that includes areas for sport fishing accessible to persons with disabilities.

(b) Commencing with the booklet of sport fishing regulations published by the commission in 1986, the availability of sport fishing areas, identified by the department as accessible to persons with disabilities under subdivision (a), shall be noted in the booklet of regulations, together with telephone numbers and instructions for obtaining a list of those areas from regional department offices.

(c) Commencing with the booklet of sportfishing regulations published in 1987, the booklet shall also contain any human health advisories relating to fish that are formally issued by the State Department of Health Services, or summaries of those human health advisories. The summaries shall be prepared in consultation with the State Department of Health Services.

Comment. Subdivisions (a) and (b) of Section 7115 continue former Section 217.5 without substantive change.

Subdivision (c) continues former Section 217.6 without substantive change.

Fish & Game Code § 7120 (amended). Bag limit

SEC. ___. Section 7120 of the Fish and Game Code is amended to read:

7120. It is unlawful for any person to possess more than one daily bag limit of any fish taken under a license issued pursuant to Section 714 or Article 3 (commencing with Section 7145) unless authorized by regulations adopted by the commission ~~pursuant to Section 206~~.

Comment. Section 7120 is amended to update a cross-reference.

Government Code § 11343.4 (amended). Effective date of regulation

SEC. ___. Section 11343.4 of the Government Code is amended to read:

11343.4. (a) Except as otherwise provided in subdivision (b), a regulation or an order of repeal required to be filed with the Secretary of State shall become effective on a quarterly basis as follows:

(1) January 1 if the regulation or order of repeal is filed on September 1 to November 30, inclusive.

(2) April 1 if the regulation or order of repeal is filed on December 1 to February 29, inclusive.

(3) July 1 if the regulation or order of repeal is filed on March 1 to May 31, inclusive.

(4) October 1 if the regulation or order of repeal is filed on June 1 to August 31, inclusive.

(b) The effective dates in subdivision (a) shall not apply in all of the following:

(1) The effective date is specifically provided by the statute pursuant to which the regulation or order of repeal was adopted, in which event it becomes effective on the day prescribed by the statute.

(2) A later date is prescribed by the state agency in a written instrument filed with, or as part of, the regulation or order of repeal.

(3) The agency makes a written request to the office demonstrating good cause for an earlier effective date, in which case the office may prescribe an earlier date.

(4)(A) A regulation adopted by the Fish and Game Commission ~~pursuant to~~ that is governed by Article ~~1~~ 2 (commencing with Section ~~200~~ 250) of Chapter 2 of Division 1 of the Fish and Game Code.

(B) A regulation adopted by the Fish and Game Commission that requires a different effective date in order to conform to a federal regulation.

Comment. Section 11343.4 is amended to update a cross-reference.

Health and Safety Code § 131052 (amended). Transfer of jurisdiction

SEC. ___. Section 131052 of the Health and Safety Code is amended to read:

131052. In implementing the transfer of jurisdiction pursuant to this article, the State Department of Public Health succeeds to and is vested with all the statutory duties, powers, purposes, responsibilities, and jurisdiction of the former State Department of Health Services as they relate to public health as provided for or referred to in all of the following provisions of law:

(1) Sections 550, 555, 650, 680, 1241, 1658, 2221.1, 2248.5, 2249, 2259, 2259.5, 2541.3, 2585, 2728, 3527, 4017, 4027, 4037, 4191, 19059.5, 19120, 22950, 22973.2, and 22974.8 of the Business and Professions Code.

(2) Sections 56.17, 1812.508, and 1812.543 of the Civil Code.

(3) Sections 8286, 8803, 17613, 32064, 32065, 32066, 32241, 49030, 49405, 49414, 49423.5, 49452.6, 49460, 49464, 49565, 49565.8, 49531.1, 56836.165, and 76403 of the Education Code.

(4) Sections 405, 6021, 6026, 18963, 30852, 41302, and 78486 of the Food and Agricultural Code.

(5) Sections 307, 355, 422, 7572, 7574, 8706, 8817, and 8909 of the Family Code.

(6) Sections ~~217.6~~ 1115, 1507, 1786, 4011, 5671, 5674, 5700, 5701, 5701.5, 7715, and 15700 of the Fish and Game Code.

(7) Sections 855, 51010, and 551017.1 of the Government Code. For purposes of subdivision (s) of Section 6254 of the Government Code, the term "State Department of Health Services" is hereby deemed to refer to the State Department of Public Health.

(8) (A) Sections 475, 1180.6, 1418.1, 1422.1, 1428.2, 1457, 1505, 1507.1, 1507.5, 1570.7, 1599.2, 1599.60, 1599.75, 1599.87, 2002, 2804, 11362.7, 11776, 11839.21, 11839.23, 11839.24, 11839.25, 11839.26, 11839.27, 11839.28, 11839.29, 11839.30, 11839.31, 11839.32, 11839.33, 11839.34, 17920.10, 17961, 18897.2, 24185, 24186, 24187, 24275, 26101, 26122, 26134, 26155, 26200, and 26203.

(B) Chapters 1, 2, 2.05, 2.3, 2.35, 2.4, 3.3, 3.9, 3.93, 3.95, 4, 4.1, 4.5, 5, 6, 6.5, 8, 8.3, 8.5, 8.6, 9, and 11 of Division 2.

(C) Articles 2 and 4 of Chapter 2, Chapter 3, and Chapter 4 of Part 1, Part 2 and Part 3 of Division 101.

(D) Division 102, including Sections 102230 and 102231.

(E) Division 103, including Sections 104145, 104181, 104182, 104182.5, 104187, 104191, 104192, 104193, 104316, 104317, 104318, 104319, 104320, 104321, 104324.2, 104324.25, 104350, 105191, 105251, 105255, 105280, 105340, and 105430.

(F) Division 104, including Sections 106615, 106675, 106770, 108115, 108855, 109282, 109910, 109915, 112155, 112500, 112650, 113355, 114460, 114475, 114650, 114710, 114850, 114855, 114985, 115061, 115261, 115340, 115736, 115880, 115885, 115915, 116064, 116183, 116270, 116365.5, 116366, 116375, 116610, 116751, 116760.20, 116825, 117100, 117924, and 119300.

(G) Division 105, including Sections 120262, 120381, 120395, 120440, 120480, 120956, 120966, 121155, 121285, 121340, 121349.1, 121480, 122410, and 122420.

(H) Part 1, Part 2 excluding Articles 5, 5.5, 6, and 6.5 of Chapter 3, Part 3 and Part 5 excluding Articles 1 and 2 of Chapter 2, Part 7, and Part 8 of Division 106.

(9) Sections 799.03, 10123.35, 10123.5, 10123.55, 10123.10, 10123.184, and 11520 of the Insurance Code.

(10) Sections 50.8, 142.3, 144.5, 144.7, 147.2, 4600.6, 6307.1, 6359, 6712, 9009, and 9022 of the Labor Code.

(11) Sections 4018.1, 5008.1, 7501, 7502, 7510, 7511, 7515, 7518, 7530, 7550, 7553, 7575, 7576, 11010, 11174.34, and 13990 of the Penal Code.

(12) Section 4806 of the Probate Code.

(13) Sections 15027, 25912, 28004, 30950, 41781.1, 42830, 43210, 43308, 44103, and 71081 of the Public Resources Code.

(14) Section 10405 of the Public Contract Code.

(15) Sections 883, 1507, and 7718 of the Public Utilities Code.

(16) Sections 18833, 18838, 18845.2, 18846.2, 18847.2, 18863, 30461.6, 43010.1, and 43011.1 of the Revenue and Taxation Code.

(17) Section 11020 of the Unemployment Insurance Code.

(18) Sections 22511.55, 23158, 27366, and 33000 of the Vehicle Code.

(19) Sections 5326.9, 5328, 5328.15, 14132, 16902, and 16909, and Division 24 of the Welfare and Institutions Code. Payment for services provided under the Family Planning, Access, Care, and Treatment (Family PACT) Waiver Program pursuant to subdivision (aa) of Section 14132 and Division 24 shall be made through the State Department of Health Care Services. The State Department of Public Health and the State Department of Health Care Services may enter into an interagency agreement for the administration of those payments. This paragraph, to the extent that it applies to the Family PACT Waiver Program, shall become inoperative on June 30, 2012.

(20) Sections 13176, 13177.5, 13178, 13193, 13390, 13392, 13392.5, 13393.5, 13395.5, 13396.7, 13521, 13522, 13523, 13528, 13529, 13529.2, 13550, 13552.4, 13552.8, 13553, 13553.1, 13554, 13554.2, 13816, 13819, 13820, 13823, 13824, 13825, 13827, 13830, 13834, 13835, 13836, 13837, 13858, 13861, 13862, 13864, 13868, 13868.1, 13868.3, 13868.5, 13882, 13885, 13886, 13887, 13891, 13892, 13895.1, 13895.6, 13895.9, 13896, 13896.3, 13896.4, 13896.5, 13897, 13897.4, 13897.5, 13897.6, 13898, 14011, 14012, 14015, 14016, 14017, 14019, 14022, 14025, 14026, 14027, and 14029 of the Water Code.

Comment. Section 131052 is amended to update a cross-reference.

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Siskiyou Houndsmen and Sportsmen
15216 Indian Creek Road, Fort Jones, CA 96032 (530) 643-0324

April 16, 2015

The Honorable Jim Nielsen
California State Senate
State Capitol Building
Sacramento, CA 95814

Position: Support

Re: SB 457 (Nielsen) Bobcat Protection Act of 2013

Dear Senator Nielsen:

This is to inform you of the support of Siskiyou Houndsmen and Sportsmen for the enactment of SB 457.

AB 1213 (Chapter 748, Statutes of 2013) requires the Fish and Game Commission to delineate the boundaries of an area in which bobcat trapping is prohibited using readily identifiable features [Fish & Game Code Section 4155 (b) (3)]. Although the legislation did provide some examples of such features, it did not specifically define what the term actually means for purposes of Section 4155, nor did it specify what "readily identifiable" means for the purposes of implementation.

The Department of Fish and Wildlife has proposed that there be only two areas of the state where bobcat trapping would be allowed and that buffer zones around the boundaries of places within them where bobcat trapping is prohibited by AB 1213 be defined by using highways and other major roads. This would result in vast closure areas far exceeding the boundaries of places where bobcat trapping is statutorily prohibited. Most such places do not have major roadways within a reasonable distance and major landmarks are not defined in the law.

In effect, the DFW proposed restrictions would ban bobcat trapping in most of the state.

Although AB 1213 provided the use of highways, major roads, and landmarks as examples of how the boundaries of non-bobcat trapping areas could be described, it did not limit boundary descriptions to just these features.

However, it is clear that confusion may exist relative to how such boundaries may be described.

SB 457 would provide clarity that AB 1213 did not prohibit the use of other appropriate methods of determining the locations of boundaries. In many cases, methods other than the use of highways and major roads would be the best choice

The Governor, in his signing message for AB 1213, asked that the department work with the legislature to obtain funding for a survey of California's bobcat population and that the commission adopt regulations to implement AB 1213 after the survey has been completed. It is believed that the survey requested by the Governor is important to proper implementation of the new statute. However, to date, this process has not occurred.

SB 457 would clarify existing law and its enactment is therefore supported by Siskiyou Houndsmen and Sportsmen.

Sincerely, Paul Black

Paul Black
President, Siskiyou Houndsmen and Sportsmen

cc. California Fish and Game Commission
Governor Edmund G. Brown
Ms. Kathryn Lynch, Legislative Advocate

NOAA's "Species in the Spotlight" Campaign

The Endangered Species Act (ESA) provides a critical safety net for species facing extinction. It has prevented hundreds of imperiled species from going extinct, promoted the recovery of many others, and conserved the habitats upon which these animals depend. We are beginning to see the success of our efforts. However, recovery of imperiled species is a long-term challenge. While the United States has made significant progress in the last 40 years, we need help, locally and globally, to reverse declining populations and place them on a path to recovery.

As we enter the 5th decade of the ESA, we are re-dedicating ourselves to ensure we do not lose any species on our watch. Our continued enjoyment of all the benefits these vulnerable animals and their habitats provide depends on our collective efforts to understand and conserve these valuable resources.

The latest version of the annual NOAA Fisheries report to Congress - Recovering Threatened and Endangered Species FY 2012-2013 – is now available. We are also announcing a focused effort for eight species, which are at imminent risk of extinction. NOAA Fisheries is undertaking a focused strategy to marshal the resources available to us within the agency, as well as reaching out to our vital partners, to stabilize these species. We believe that focused effort can significantly reduce, stabilize, or reverse their rate of decline by 2020. These eight species include:

- Sacramento River Winter-run Chinook Evolutionarily Significant Unit (ESU)
- Atlantic Salmon Gulf of Maine Distinct Population Segment (DPS)
- Central California Coast Coho ESU
- Cook Inlet Beluga Whale DPS
- Hawaiian Monk Seal
- Pacific Leatherback Sea Turtle
- Southern Resident Killer Whale DPS
- White Abalone

For more information on Species in the Spotlight effort, please visit:
http://www.nmfs.noaa.gov/stories/2015/05/05_14_15species_in_the_spotlight.html

This effort presents a unique opportunity to advance Central California Coast coho salmon and Winter-Run Chinook salmon recovery.

Key actions from the Central Coast Coho Salmon recovery plan:

- Conserve California's water! Go to www.saveourwater.com to find out what you can do to make conservation a part of your daily life.
- Secure dedicated funds and staff to improve, expand, or relocate conservation hatchery programs and facilities.
- Work with partners to focus restoration in key areas to restore impaired conditions, reduce threats, and improve the freshwater survival of coho salmon.
- Pursue protection and preservation in key coho landscapes.

- Invest in interdisciplinary science to gain more understanding on how the loss of habitat diversity and variable ocean conditions may be influencing coho salmon productivity and genetic diversity.
- Expand and support California's Salmonid Monitoring Program.

Key actions from the winter-run Chinook salmon recovery plan include:

- Completing the Battle Creek Salmon and Steelhead Restoration Project to provide habitat that will support winter-run Chinook salmon;
- Reintroducing winter-run Chinook salmon into Battle Creek and the McCloud River;
- Expanding Livingston Stone National Fish Hatchery facilities to support both the captive broodstock and conservation hatchery programs;
- Improving access to historical floodplain habitat along the lower Sacramento River to provide juveniles with ample food and refuge from predators;
- Minimizing the loss of adults in agricultural ditches within the Colusa Basin;
- Conducting landscape-scale restoration throughout the Delta to improve the ecosystem's health and support native species; and
- Managing Shasta Reservoir water supplies in order to provide cold water for spawning adults, eggs, and fry, stable summer flows to avoid dewatering redds, and winter/spring pulse flows to improve smolt survival through the Delta.

NOAA Fisheries will continue to collaborate with our stakeholders and partners to protect and recover all ESA species for which we are responsible and will not divert resources away from the important and continued efforts to support all listed species under our authority.

This nationally-led initiative, "*Species in the Spotlight: Survive to Thrive*", will marshal resources around these spotlight species and recruit parters, old and new, to join us in this campaign. If you have ideas on how to connect locally in a way that highlights some of your good work, please let us know. We would like to feature your coho story in our year-long campaign, and 5-year plan, to raise awareness and support of our collective efforts to save California's iconic freshwater and marine resources.

If you have any questions regarding this initiative, please contact Charlotte Ambrose.

NOAA Leadership Message:
http://www.nmfs.noaa.gov/aboutus/leadership/may_2015_leadership_message_species_inthespotlight.html

NOAA's Report to Congress:
http://www.nmfs.noaa.gov/stories/2015/05/docs/noaa_recoveringspecies_report_web.pdf

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Charlotte Ambrose, California Programs Coordinator
NOAA Fisheries West Coast Region
U.S. Department of Commerce
Sacramento Office: 916-930-3704
Charlotte.A.Ambrose@noaa.gov
www.westcoast.fishereis.noaa.gov

NOAA Fisheries: U.S. fisheries continue to rebuild; overfishing and overfished numbers at all-time lows

Contact: Jennie Lyons
(301) 427-8013
(202) 603-9372 (Cell)

FOR IMMEDIATE RELEASE:
April 15, 2015

The number of domestic fish stocks listed as overfished or subject to overfishing has dropped to an all-time low since 1997, when NOAA began tracking stock status, according to the 2014 *Status of U.S. Fisheries* report to Congress.

The report, produced annually since 1997, highlights the United States' continued progress towards sustainably managing fish stocks. This progress is a result of the combined efforts of NOAA Fisheries, the regional fishery management councils, the fishing industry, and other partners.

Six stocks--snowy grouper on the southern Atlantic coast; North Atlantic albacore; haddock in the Gulf of Maine; gag grouper in the South Atlantic; the Jacks complex in the Gulf of Mexico; and, Bluefin tuna in the western Atlantic--were removed from the overfishing list. Two stocks were no longer listed as overfished--gag grouper in the Gulf of Mexico, and North Atlantic albacore, which was removed from both lists.

A stock is on the overfishing list when the annual catch rate is too high. A stock is on the overfished list when the population size of a stock is too low, whether because of fishing or other causes.

"This report illustrates that the science-based management process under the Magnuson-Stevens Act is working to end overfishing and rebuild stocks," said Eileen Sobeck, assistant NOAA administrator for fisheries. "While we have made tremendous progress, we know there's more work to be done -- especially as we continue to document changes to our world's oceans and ecosystems. We will continue to strive toward sustainable management of our nation's fisheries in order to preserve our oceans for future generations."

The report also finds that three more fish stocks: Gulf of Maine/Cape Hatteras butterfish; Gulf of Mexico gag grouper; and, Mid-Atlantic Coast golden tilefish were rebuilt to target levels in 2014, bringing the total number of rebuilt U.S. marine fish stocks to 37 since 2000.

"Our agency wants to let consumers know that the United States' global leadership in responsible fisheries and sustainable seafood is paying off," Sobeck said. "We are moving forward more than ever with efforts to replicate and export stewardship practices internationally. As a result of the combined efforts of NOAA Fisheries, the regional fishery management councils, and all of our partners, the number of stocks listed as subject to overfishing or overfished continues to decline and is at an all-time low."

To read the full *2014 Status of U.S. Fisheries* report, find fish stock status information, and learn more about U.S. fisheries management, go to the NOAA Fisheries website:
http://www.nmfs.noaa.gov/sfa/news/2015/status_of_stocks_2014.html

NOAA's mission is to understand and predict changes in the Earth's environment, from the depths of the ocean to the surface of the sun, and to conserve and manage our coastal and marine resources. Join us on Twitter, Facebook, Instagram, and our other social media channels.

News Release

U.S. Fish and Wildlife Service, NOAA Propose Actions to Build on Successes of Endangered Species Act

Initiatives will increase regulatory predictability, increase stakeholder engagement, and improve science and transparency

May 18, 2015

Contact(s): Jessica Kershaw (Interior), Interior_Press@ios.doi.gov
Brian Hires (Fish & Wildlife Service), (703) 358-2191, brian_hires@fws.gov
Ciaran Clayton, (NOAA), (202) 482-6090, ciaran.clayton@noaa.gov

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WASHINGTON, D.C. – Building on the success of the Obama Administration in implementing the Endangered Species Act (ESA) in new and innovative ways, today the U.S. Fish and Wildlife Service and National Marine Fisheries Service (the Services) announced an additional suite of actions the Administration will take to improve the effectiveness of the Act and demonstrate its flexibility. The actions will engage the states, promote the use of the best available science and transparency in the scientific process, incentivize voluntary conservation efforts, and focus resources in ways that will generate even more successes under the ESA.

The Endangered Species Act is an essential tool for conserving the nation's most at-risk wildlife, as well as the land and water on which they depend for habitat. The Act has prevented more than 99 percent of the species listed from going extinct, serving as the critical safety net for wildlife that Congress intended when it passed the law 40 years ago. In addition, the Act has helped move many species from the brink of extinction to the path to recovery, including California condors, Florida panthers and whooping cranes. The Obama Administration has delisted more species due to recovery than any prior administration, including the Oregon Chub, the Virginia northern flying squirrel, and the brown pelican.

"The protection and restoration of America's proud natural heritage would not be possible without the Endangered Species Act and the close collaboration among states, landowners and federal agencies that the Act promotes," said Secretary of the Interior Sally Jewell. "These actions will make an effective and robust law even more successful, and will also reinforce the importance of states, landowners and sound science in that effort."

"For decades, the Endangered Species Act has helped protect threatened species and their habitats," said Secretary of Commerce Penny Pritzker. "The changes announced today by the Services amount to an improved way of doing business, one that advances the likelihood of conservation gains across the nation while reducing burdens and promoting certainty."

In furtherance of ESA improvements first outlined in 2011, the Services took steps today to ensure that states are partners in the process by which imperiled species are considered for listing under the Act. The proposed change – open for public comment today – would require petitioners to solicit information from relevant state wildlife agencies prior to submitting a petition to the Services, to include any such information provided by the states in the petition.

Larry Voyles, President of the Association of Fish and Wildlife Agencies, notes, "Consistent with the intent of the ESA that listing decisions be based on the best available science, we appreciate the Service's due recognition of, and requirement to, incorporate the data and information of state fish and wildlife agencies for the formulation of listing petitions."

The changes would provide greater clarity to the public and states on what information would best inform the evaluation of a species' status and result in better coordination with state wildlife agencies, which often have unique information and insights on imperiled species.

As part of the Administration's ongoing efforts, the Services will also be unveiling additional proposals over the coming year to achieve four broad goals:

1. **Improving science and increasing transparency.** To improve public understanding of and engagement in ESA listing processes, the Services will:
    - Strengthen procedures to ensure that all information that can be publicly disclosed related to proposed listing and critical habitat rule notices will be posted online; and
    - Adopt more rigorous procedures to ensure consistent, transparent, and objective peer-review of proposed decisions.

2. **Incentivizing voluntary conservation efforts.** Voluntary conservation programs, such as Safe Harbor agreements and Candidate Conservation Agreements, can improve conditions for listed and at-risk species, and conservation banking can make listed species and their habitats assets for landowners. The Services will:
    - Update guidance on the use of these proactive tools to establish consistent standards; and
    - Adopt a policy promoting the expanded use of conservation banking and other advance mitigation tools.

3. **Focusing resources to achieve more successes.** The Services will work to focus limited resources on activities that will be most impactful. These actions include:
    - NOAA's launch of a new initiative to focus resources on eight of the nation's most vulnerable marine species with the goal of reducing, stabilizing, or reversing their rate of decline by 2020;
    - Proposed revisions to interagency consultation procedures to streamline the process for projects, such as habitat restoration activities, that result in a net conservation benefit for the species;
    - Updates to the Habitat Conservation Planning Handbook to make developing and permitting plans more efficient and timely.

4. **Engaging the States.** State fish and wildlife agencies, by virtue of their responsibilities and expertise, are essential partners in efforts to conserve threatened and endangered species. The Services will:
    - Implement the aforementioned revised petition regulations to give states an opportunity to provide input prior to submission; and
    - Update policy regarding the role of state agencies to reflect advancements in collaboration between the Services and the States.

These proposals add to other actions already in progress, such as finalizing a policy on prelisting conservation credits and on critical habitat exclusions. Efforts to make the ESA work better will also include additional future review and update of regulations and policy, consistent with President Obama's

Executive Order 13563, *Improving Regulation and Regulatory Review*, and is outlined in the Department of Interior's *Preliminary Plan for Retrospective Regulatory Review*.

"The proposed policies would result in a more nimble, transparent and ultimately more effective Endangered Species Act," said Director of the Fish and Wildlife Service Dan Ashe. "By improving and streamlining our processes, we are ensuring the limited resources of state and federal agencies are best spent actually protecting and restoring imperiled species."

"The ESA has prevented the extinction of many imperiled species, promotes the recovery of many others, and conserves the habitats upon which they depend," said Eileen Sobeck, assistant administrator for NOAA Fisheries. "But more work needs to be done on all levels. We need everyone's help locally and globally to reverse declining populations and lift species out of danger. "

In the last six years, almost two dozen species have either been recovered and delisted, or are now proposed for delisting. There have also been more than a dozen imperiled species that were candidates for listing under the Act that have been conserved through proactive efforts and no longer require consideration for listing. They include the Bi-State population of the greater sage-grouse, the Montana population of arctic grayling, and the Coral Pink Sand Dunes tiger beetle.

The effort will focus on recovering species and strive to make administrative and regulatory improvements. The Services are not seeking any legislative changes to the Act, because the agencies believe that implementation can be significantly improved through rulemaking and policy formulation.

The Endangered Species Act was enacted in 1973 to protect plants and animal species threatened with extinction. Many of the regulations implementing provisions of the ESA were promulgated in the 1980s and do not reflect advances in conservation biology and genetics, as well as recent court decisions interpreting the Act's provisions.

For more information on the proposed ESA petition regulations, go to http://www.fws.gov/home/feature/2015/proposed-revised-petition-regulations.pdf. Public comments on the proposed rule will be accepted on or before 60 days following its publication in the *Federal Register*. The rule is expected to publish in the *Federal Register* later this week.

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The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. We are both a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals, and commitment to public service. For more information on our work and the people who make it happen, visit www.fws.gov.

For more information on our work and the people who make it happen, visit http://www.fws.gov/. Connect with our Facebook page, follow our tweets, watch our YouTube Channel and download photos from our Flickr page.

Press Release

Successful Conservation Partnership Keeps Bi-State Sage-Grouse Off Endangered Species List

Partnership among California, Nevada, Federal Agencies, & Landowners Helped Conserve Key Habitat, Reduce Threats to Bird

April 21, 2015

Contact(s): Jessica Kershaw (Interior), Interior_Press@ios.doi.gov
Dan Hottle (FWS), daniel_hottle@fws.gov
USDA Office of Communications (202)720-4623
Marni St. Martin (NV), mstmartin@gov.nv.gov
Gloria Sandoval (CA), gloria.sandoval@resources.ca.gov

RENO, NV – U.S. Secretary of the Interior Sally Jewell announced that the U.S. Fish and Wildlife Service has determined that the Bi-State population of greater sage-grouse does not require the protection of the Endangered Species Act (ESA).

Secretary Jewell joined with USDA Under Secretary Robert Bonnie, Nevada Governor Brian Sandoval, California Natural Resources Agency Secretary John Laird and other state and local partners to celebrate an extensive and long-term conservation partnership on behalf of the bi-state greater sage-grouse population. Federal, state and private partners have come together to proactively conserve key habitat and significantly reduce long-term threats to this distinct population segment of greater sage-grouse.

A key factor in the decision not to list the bird was the development of The Bi-State Action Plan, a conservation plan developed by partners in the Bi-State Local Area Working Group over the past 15 years and secured with $45 million in funding. This adds to nearly $30 million worth of conservation work USDA and other partners have already completed to implement this plan.

“Thanks in large part to the extraordinary efforts of all the partners in the working group to address threats to greater sage-grouse and its habitat in the Bi-State area, our biologists have determined that this population no longer needs ESA protection,” said Jewell. “What’s more, the collaborative, science-based efforts in Nevada and California are proof that we can conserve sagebrush habitat across the West while we encourage sustainable economic development.”

“This is welcome news for all Nevadans. I applaud the local area working group, private citizens, Tribes, the Nevada Department of Wildlife and our federal partners for their tremendous efforts to develop conservation actions that preclude the need to list the species while still allowing for sustainable economic development,” said Sandoval. “Today’s announcement highlights the critical partnerships that must exist for our conservation strategies to be effective and demonstrate that sage grouse and economic development can coexist in both the bi-state area and across the range of the greater sage grouse.”

“Together, we’ve worked with ranchers, conservation groups, local governments in Nevada and California to take proactive steps to restore and enhance sage-grouse habitat while also helping them improve their ranching operations,” Bonnie said. “The decision to not list the bi-state sage-grouse proves this work has paid off.”

“The efforts of the local working group and the partnerships they’ve built over the past decade are truly unprecedented,” said Dan Ashe, U.S. Fish and Wildlife Service Director. “They have set the stage for the next generation of conservation and convinced us that the sage-grouse population has a bright future in the Bi-State region.”

“California is committed to continue working with our public and private partners in implementing this strong, science-based conservation plan into the future,” said Laird. “This partnership between California and Nevada serves as a model for effective conservation of the Greater sage-grouse in other Western states.”

As its name suggests, the Bi-State Distinct Population Segment straddles the California-Nevada border, where biologists estimate that between 2,500 and 9,000 of these ground-dwelling birds inhabit about 4.5 million acres of high-desert sagebrush. Greater sage-grouse are known for the males’ flamboyant springtime mating displays on traditional dancing grounds, also known as leks. The birds use a variety of sagebrush habitats throughout the year on private, state and federal lands.

The U.S. Fish and Wildlife Service declared the Bi-State population of greater sage-grouse a Distinct Population Segment (DPS) under the ESA in 2010 because genetic analysis shows it has been separated from other greater sage-grouse for thousands of years and the genetic differences are significant.

In October 2013, the Service proposed listing the Bi-State DPS as threatened under the ESA based on significant population declines due to the loss and fragmentation of its sagebrush habitat from urbanization and associated infrastructure development, encroachment of sagebrush by conifers, and a vicious cycle of wildfire and fire-adapted invasive grasses. These threats, combined with the relatively limited number of birds, the small population size and their isolation, were determined to pose a significant threat to the species.

The Service is withdrawing this proposal in large part because of the success of the Bi-State Action Plan. The plan is the product of the Bi-State Area Local Working Group, comprising federal, state and local agencies and landowners from Nevada and California, which has been pursuing sage-grouse conservation since the early 2000s. Since then, the working group’s technical advisory committee has finalized plans on nearly 80 science-driven conservation projects specifically designed to reduce identified threats and protect the sagebrush-steppe habitat.

The working group’s executive oversight committee has raised more than $45 million in federal and state funding to ensure the projects are implemented and completed over the next 10 years. Long-term projects implemented under the Bi-State Action Plan include population monitoring, urbanization abatement measures, livestock management, wild horse management, pinyon and juniper removal, disease and predation studies and other habitat improvement and restoration projects.

Each of the projects is tied to a specific population management unit within the region, led and funded by a specific agency or partnership, and ranked by the immediacy of the threat to the species.

The comprehensive plan and funding commitments give the Service confidence that effective conservation measures needed to address threats to the species are highly likely to be implemented.

The working group members include private landowners in California and Nevada, Nevada Department of Wildlife, California Department of Fish and Wildlife, Nevada Division of Forestry, California State Parks, University of Nevada Cooperative Extension, nongovernmental organizations such as Nevada Wildlife Federation, Washoe Tribe of California and Nevada, Los Angeles Department of Water and

Power, Bureau of Land Management, U.S. Forest Service, Natural Resources Conservation Service, U.S. Geological Survey, Department of Defense and the U.S. Fish and Wildlife Service.

Conservation work on private lands – through easements and habitat restoration – has played an important role in connecting national forests and other public lands, working to keep habitat intact. The U.S. Department of Agriculture's Natural Resources Conservation Service has already invested nearly $20 million in conservation assistance to ranchers through this effort. This has helped ranchers protect 7,300 acres of key summer habitat through easements, with an additional 4,500 acres in process. This investment has also helped them remove invading juniper and pinyon trees, enhancing nearly 4,000 acres of important sagebrush-steppe habitat.

This summer, the Forest Service will begin treatments to improve sagebrush ecosystem health on 29,000 acres of key habitat for the sage grouse.

The USGS has been a key partner in monitoring the Bi-State population and interpreting data collected to assure the Bi-State partners are using the best science in their conservation efforts.

Along with withdrawing the listing proposal, the U.S. Fish and Wildlife Service is also withdrawing proposed rules under section 4(d) of the ESA and the proposed designation of critical habitat.

The U.S. Fish and Wildlife Service is concurrently conducting a separate status review for the greater sage-grouse across its 11-state range. In 2010, it determined the greater sage-grouse was warranted for protection but that action was precluded by higher priorities. A determination on whether the species still requires protection is due Sept. 30, 2015.

The deteriorating health of the greater sage-grouse and western sagebrush landscapes has sparked an unprecedented and proactive partnership across eleven states to conserve the uniquely American habitat that supports diverse wildlife, outdoor recreation, and ranching and other traditional land uses that form the cornerstone of the Western way of life.

For more detailed information on the Bi-State DPS of the greater sage-grouse and its habitat, along with more information about conservation projects that are being done to help protect this unique species, visit www.fws.gov/greatersagegrouse.

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The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people. We are both a leader and trusted partner in fish and wildlife conservation, known for our scientific excellence, stewardship of lands and natural resources, dedicated professionals, and commitment to public service. For more information on our work and the people who make it happen, visit www.fws.gov.

For more information on our work and the people who make it happen, visit http://www.fws.gov/. Connect with our Facebook page, follow our tweets, watch our YouTube Channel and download photos from our Flickr page.

From:	Colin Cochran
To:	FGC
Subject:	Help Support Funding for Conservation, Recreation and Preservation
Date:	Monday, April 20, 2015 11:41:54 AM
Importance:	High

Hello Executive Director Mastrup:

My name is Colin Cochran and I am contacting you in regard to a critical issue facing regional, state and national conservation efforts along with outdoor tourism and recreational economy.

I am working with leaders in California's conservation world along with members of the outdoor tourism industry to encourage Senator Diane Feinstein and Congressman Ken Calvert to work with their congressional colleagues to provide the necessary support for programs that will ensure a successful future for the outdoor recreation industry and a sustainable future for the fisheries, beaches, rivers, forests, and parks upon which this industry relies.

Economic Impact

The outdoor recreation and tourism industry is an economic driver for our country and for California. These are well-paying jobs in cities, towns and rural counties across the state that can't be exported or outsourced.

- America's outdoor economy:
  - **Supports approximately 6 million jobs**
  - **Generates nearly $80 billion in federal, state and local tax revenue annually**

- California's outdoor economy is responsible for:
  - **$85.4 billion in consumer spending**
  - **732,100 direct California jobs**
  - **$27 billion in salaries and wages**
  - **$6.7 billion in state and local tax revenue**

Issue Background

Without the preservation and maintenance of our outdoor recreational attractions, the future of this economic sector is dark.

California's natural beauty is a huge tourist draw and economic engine so this issue hits close to home. Shrinking funding for conservation, recreation and historic preservation the parks, waterways, public lands and forests are putting the future of this industry at risk.

Since the late 1970s, federal funding in conservation, outdoors and historic preservation has fallen from roughly 2 percent of the federal budget to 1 percent.

In budgets being considered for FY 2016, natural resource conservation, outdoor recreation and historic preservation programs could be subject to disproportionate cuts and program eliminations.

Congress must secure funding for a successful economy and healthy, sustainable outdoor areas. The best people to deliver that message are industry leaders like yourself.

Take Action

We hope that the Commission and/or individual Commissioners will please join us in asking Senator Feinstein and Congressman Calvert to support a modest 2% increase to outdoor economy programs in the Interior and Environment Appropriations Bill for Fiscal Year 2016.

Senator Feinstein sits on Senate Appropriations; Congressman Calvert sits on the House Committee on Appropriations and is Chairman of Subcommittee on Interior, Environment and Related Agencies. They are powerful voices on this issue, particularly given the importance of the outdoor economy to California.

We hope you will consider writing a letter, calling or meeting in person with Senator Feinstein; Congressman Calvert and/or their senior staff to encourage them to fight for critical funding for our outdoor economy. As a leading California voice for the tourism industry, your voice will carry particular weight with their offices.

Please let us know if you are interested in working with us and we will get you a sample letter and/or talking points for your consideration.

If you would like some more information on the economic impact of the outdoor industry, please follow this link.

You can also find more information on our effort here: http://www.avcrp.org/welcome/

With budget negotiations ongoing in Congress, it is important that we move quickly and that the Senator and Congressman begin hearing from voices like yours as soon as possible. Please let us know if there is any help we can offer and/or any questions we can answer.

Thank you for your consideration and we look forward to working with you.

All the best,

Colin Cochran
503.464.6011

California Fish and Game Commission

Potential Agenda Items for August 2015 Commission Meeting

June 1, 2015

The next regular meeting of the California Fish and Game Commission is scheduled for August 4-5, 2015 in Fortuna. This document identifies potential agenda items, including items to be received from the California Department of Fish and Wildlife (Department).

Tuesday, August 4: Marine-related and Administrative Items

1. Tribal Committee update
2. Marine Resource Committee update
3. Notice: Sport Dungeness crab/sport crab trap proposed regulations
4. Notice: Commercial hagfish (40-gallon barrels) proposed regulations
5. Notice: Commercial herring proposed regulations
6. Notice: Marine protected areas proposed regulations
7. Notice: Groundfish federal conformance
8. Discuss: Coho salmon recovery report
9. Discuss: Santa Barbara Mariculture application for new state water bottom lease and determination that the lease would be in the public interest
10. Discuss: Santa Barbara Mariculture application to renew existing state water bottom lease
11. Discuss/Approve: Neushul Mariculture, Inc. request to renew state water bottom lease #M-654-03 for aquaculture in the Santa Barbara channel
12. Receive Charles Friend Oyster Company request to renew state water bottom lease M-430-04 for aquaculture in Tomales Bay
13. Craig Yerkins appeal of Department denial to reinstate Transferable D. Crab Vessel Permit No. CT0068-T7 for F/V Terry S (FG03513)
14. Direct staff/Action: Regulatory and non-regulatory requests from prior meetings
15. Other information (staff report, legal, legislative, federal)
16. Department informational items

Wednesday, August 5: Non-marine-related and Administrative Items

17. Wildlife Resources Committee update
18. Notice: Sport Fish 2016 proposed regulations
19. Notice: Transgenic fish proposed regulations
20. Notice: DFW Lands Pass proposed regulations
21. Adopt: Waterfowl proposed regulations
22. Adopt: Upland game bird proposed regulations
23. Adopt: Bobcat protection mandate proposed regulations
24. Receive/Approve: Private lands management licenses, management plans and annual harvest programs

25. Receive/Discuss/Action: Pine Ranch Private Lands Wildlife Habitat and Enhancement Management Area annual plan
26. Discuss/Action: Pacific Fisher listing decision
27. Receive: Department's status review report on Townsend's big-eared bat
28. Receive: Department's status review report on northern spotted owl
29. Receive: Department's report on beavers
30. Receive: Petition to List the Humboldt Marten (*Martes caurina humboldtensis*) as an endangered species under the California Endangered Species Act
31. Discuss: Potential nonlead ammunition coupon program
32. Discuss/Approve: Future agenda items
33. New business

State of California
Department of Fish and Wildlife

RECEIVED
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COMMISSION

2015 MAY 29 AM 10: 31

Memorandum

Date: May 28, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: Request for changes to the Fish and Game Commission's 2015 regulatory calendar.

The Department of Fish and Wildlife (Department) requests the schedule changes identified below to the Fish and Game Commission's (Commission) 2015 regulatory calendar. As you know, the Commission has already agreed to consider approving notice of proposed revisions to the market squid logbooks, minus the lighting provisions, at its June meeting with discussion and adoption at the August and October meetings, respectively.

1) Move the request to publish notice of the Commission's intent to amend the Dungeness crab sport fishing regulations in Section 29.85 to the August business meeting in Fortuna, with adoption at the December meeting in San Diego. The Department needs additional time to conduct outreach with the Commercial Passenger Fishing Vessel fleet.
2) Move the notice hearing for the proposed revisions to the definition of transgenic animals in Section 1.92 to the August business meeting with adoption at the October meeting.
3) Move the notice hearing for the proposed amendments to the falconry regulations in Section 670 from the June business meeting to the October meeting, with discussion scheduled for the December meeting and adoption at the February 2016 meeting. The Department will use the additional time to vet the proposed revisions with the falconry community and other interested parties.
4) Remove the previously proposed amendments to the wildlife rehabilitation regulations in Section 679 from the 2015 regulatory calendar. The Department may bring this rulemaking package back for reconsideration in 2017.

If you have any questions or need additional information, please contact Craig Martz, Regulations Unit Manager at (916) 653-4674 or Craig.Martz@wildlife.ca.gov.

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PERPETUAL TIMETABLE FOR CALIFORNIA FISH AND GAME COMMISSION ANTICIPATED REGULATORY ACTIONS

Note: Dates shown reflect the actual date intended for the subject regulatory action. Please check commission and committee meeting agendas to confirm dates and actions.

Updated: 05/29/15

PROPOSED CHANGES ARE SHOWN IN BLUE

REGULATORY CHANGE CATEGORY	ACTION DATE, TYPE AND LOCATION	2015											2016					
		MAY 6	JUN 9	JUN 10	JUN 11	JUL 8	AUG 4	AUG 5	SEP 9	OCT 6	OCT 7	OCT 8	NOV 4	DEC 9	DEC 10	JAN TBD	FEB TBD	MAR TBD	MAR TBD	APR TBD	APR TBD
		WRC LOS ANGELES	TRIBAL MAMMOTH LAKES	**FGC ACTION** MAMMOTH LAKES		MRC NORTH COAST	**FGC ACTION** FORTUNA		WRC FRESNO	TRIBAL LOS ANGELES	**FGC ACTION** LOS ANGELES		MRC VENTURA	**FGC ACTION** SAN DIEGO		WRC TBD	**FGC ACTION** TBD	MRC TBD	**TELECONFERENCE**	**FGC ACTION** TBD	**TELECONFERENCE**
BOBCAT PROTECTION MANDATE	478				D			A													
UPLAND (RESIDENT) GAME BIRD	300, 708.18				D			A	V							R					N	
WATERFOWL	502				D			A	V							R					N	
COMMERCIAL MARKET SQUID ~~LIGHTS~~/LOGBOOK	149			**N**							**A**										
COMMERCIAL HAGFISH - 40 GAL BARRELS	180.6						N				D/A										
COMMERCIAL HERRING	163, 164						N				D/A										
SPORT DUNGENESS CRAB/SPORT CRAB TRAP	29.85						**N**				**D**			**A**							
SPINY LOBSTER, SPORT AND COMMERCIAL	29.80, 29.90, 121-122						N							**D/A**							
MARINE PROTECTED AREAS	632		V				N				D			A							
GROUNDFISH FEDERAL COMPLIANCE	27.25 - 28.58						N				D			A							
SPORT FISH 2016	1.45 et al.	R						N				A			A	V					
BIG GAME TAG QUOTAS	360, 361, 362, 363, 364							**N**				**A**			**A**						
TRANSGENIC FISH	**1.92, 671**							**N**				**A**									
DFW LANDS VISITOR PASS	550, 550.5, 551, 630, 703	R						N				D			A						
TRAWL LOGBOOKS	190										N			A							
FALCONRY CLEAN-UP	670											**N**			**D**			**A**			
COMMISSION PROCEDURES	TBD											**N**			**D**			**A**			
OCEAN SALMON SPORT FISHING (PHASE I)	1.73, 27.75, 27.80(c)													N			D		A		
OCEAN SALMON SPORT FISHING (PHASE II)	27.80																D				A
KLAMATH RIVER SPORT FISHING	7.50(b)(91.1)	V							R					N			D				A
CENTRAL VALLEY SALMON	7.50(b)(5)(68) & (156.5)														N			D			A
MAMMAL 2015-2016	360,361,362,363,364	V							R						N			D		A	
KELP FEES, RATE AND DEPOSITS **[2016]**	165, 165.5, 705												V								
COMMERCIAL SEA CUCUMBER **[2016]**	128																				
COMMERCIAL SEA URCHIN **[TBD]**	120.7																				
AZA/ZAA **[TBD]**	671.1																				

ADDITIONAL PROPOSED EMERGENCY REGULATORY ACTIONS (SCHEDULED AS REQUIRED)

MERCED RIVER	**7.50(b)(188)**				**E**																
MEASURES FOR FISHERIES AT RISK	**8.01**				**E**																

MRC = MARINE RESOURCE COMMITTEE, TC = TRIBAL COMMITTEE, WRC = WILDLIFE RESOURCE COMMITTEE,

E = EMERGENCY, N = NOTICE HEARING, D = DISCUSSION HEARING, A = ADOPTION HEARING, V = VETTING, R = COMMITTEE RECOMMENDATION

STATE OF CALIFORNIA

FISH AND GAME COMMISSION
MEMORANDUM

DATE: June 1, 2015

TO: President Jack Baylis and Commission Members

FROM: Commission Staff

SUBJECT: **Recommended change to the perpetual timetable for rulemaking actions and Mirage Trail Section100**

No later than January 30 each year, FGC submits to the Office of Administrative Law (OAL) a rulemaking calendar with known rulemakings for that year, pursuant to the Administrative Procedure Act (Government Code, Section 11017.6). The calendar is published in the California Regulatory Notice Register, and is used by OAL and the California Department of Finance in scheduling their regulatory reviews.

Last year FGC began using a perpetual timetable of regulatory actions format for tracking and updating its rulemaking calendar. The perpetual timetable reflects changes, additions and deletions as they occur throughout the year and any anticipated changes for the next 12 months.

Staff recommends a timetable change for the Commission Procedures rulemaking. At its December 3, 2014 meeting in Van Nuys, FGC authorized staff to continue developing a rulemaking package for Commission procedures, and provided staff with input on potential specific elements. Given other commitments and constraints, staff did not make sufficient progress to bring to FGC a draft ISOR for consideration under the original timeline. Staff recommends changing the notice hearing date to October 2015, with adoption in December 2015.

Related though not specific to the timetable, ***staff plans to file with OAL a "Section 100" amendment for California Code of Regulations, Title 14, subsections 630(g)(7) and 630(h)(24), related to Mirage Trail in Magnesia Spring Ecological Reserve***. Section 100 filings are for changes to make a regulatory provision consistent with a changed California statute. In 2014 legislation became effective that identifies access dates for Mirage Trail, so long as FGC determines that certain conditions are met (Fish and Game Code, §1587); FGC determined at its April 2014 meeting that the specified conditions were met. Action to update Title 14 was placed on hold until the Department Lands rulemaking was completed so that the same section of Title 14 would not be open in two different rulemakings. Staff plans to file the Section 100 amendment this summer; in the interim, statute prevails over Title 14.

Commissioners
Jack Baylis, President
Los Angeles
Jim Kellogg, Vice President
Discovery Bay
Richard Rogers, Member
Santa Barbara
Michael Sutton, Member
Monterey
Jacque Hostler-Carmesin, Member
McKinleyville

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

Fish and Game Commission

Wildlife Heritage and Conservation
Since 1870

Sonke Mastrup, Executive Director
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(916) 653-4899
(916) 653-5040 Fax
www.fgc.ca.gov

WILDLIFE RESOURCES COMMITTEE

Committee Co-Chairs: Commissioner Baylis and Commissioner Kellogg

Meeting Agenda
May 6, 2015, 10:00 a.m.

California Department of Transportation (CalTrans)
Conference Room 01.037
100 South Main Street, Los Angeles

***NOTE**: Items may be heard in any order pursuant to the discretion of the presiding commissioner. See important information about Committee deadlines and procedures at the end of the agenda; the prime comment deadline is **5:00 pm on April 23, 2015**.*

1. Public forum
   Any member of the public may address the Commission regarding the implementation of its policies or any other matter within the jurisdiction of the Commission. The issue to be discussed should not be related to any item on the current agenda. As a general rule, action cannot be taken on issues not listed on the agenda; at the discretion of the Commission, staff may be requested to follow up on such items. Submitting written comments is encouraged to ensure that all comments will be included in the record before the Commission. Please be prepared to summarize your comments in the time allocated by the presiding commissioner.

2. Discuss and approve recommendations for 2015 scheduled rulemakings
   a. Sport fishing regulations (Sections 1.45, et al.)
   b. Department lands visitor pass (Sections 550, 550.5, 551, 630, and 703)

3. Identify and discuss initial recommendations for 2016 scheduled rulemakings
   a. Klamath River sport fishing
   b. Mammal hunting

4. Update on and discussion of predator management policy and regulations

5. New business
   a. Discussion of wild pig problems and commission policy
   b. California Department of Fish and Wildlife update regarding snagging
   c. Creating a dialogue with both consumptive and non-consumptive users

FISH AND GAME COMMISSION
2015 MEETING SCHEDULE
www.fgc.ca.gov

MEETING DATE	COMMISSION MEETING	COMMITTEE MEETING
June 9		**Tribal Committee** Mountainside Conference Center 1 Minaret Road Mammoth Lakes, CA 93456
June 10-11	Mountainside Conference Center 1 Minaret Road Mammoth Lakes, CA 93456	
July 8		**Marine Resources** Trinidad Town Hall 409 Trinity Street Trinidad, CA 95570
August 4-5	River Lodge Conference Center 1800 Riverwalk Drive Fortuna, CA 95540	
September 9		**Wildlife Resources** Department of Industrial Relations 2550 Mariposa Mall, Room 1036 Fresno, CA 93721
October 6		**Tribal Committee** Embassy Suites – LAX North 9801 Airport Boulevard Los Angeles, CA 90045
October 7-8	Embassy Suites – LAX North 9801 Airport Boulevard Los Angeles, CA 90045	
November 4		**Marine Resources** Southern California
December 9-10	Town and Country Resort & Convention Center 500 Hotel Circle North San Diego, CA 92108	

OTHER MEETINGS OF INTEREST

Wildlife Conservation Board

- May 21, Sacramento, CA
- September 3, Sacramento, CA
- November 19, Sacramento, CA

Pacific Fishery Management Council

- June 12-17, Spokane, WA
- September 11-16, Sacramento, CA
- November 14-19, Garden Grove, CA

Pacific Flyway Council

- July 24, Reno, NV

Western Association of Fish and Wildlife Agencies

- July 16-22, Reno, NV

IMPORTANT COMMITTEE MEETING PROCEDURES INFORMATION

PERSONS WITH DISABILITIES

These facilities are accessible to persons with disabilities.

1. To request reasonable accommodations for a disability, please contact the California Fish and Game Commission at (916) 653-4899 as soon as possible and no later than five (5) business days prior to the meeting.
2. For persons with a hearing or speech disability, please contact the California Relay Service as soon as possible and no later than five (5) business days prior to the meeting at 1-800-735-2929 (TTY) or 1-800-735-2922 (voice) and request your message be relayed to the California Fish and Game Commission.
3. If a request for an accommodation has been submitted but due to circumstances is no longer needed, please contact the California Fish and Game Commission at (916) 653-4899.

SUBMITTING WRITTEN COMMENTS AND MATERIALS

The public is encouraged to attend Committee meetings and engage in the discussion about items on the agenda; the public is also welcome to comment on agenda items in writing. You may submit your written comments by one of the following methods (only one is necessary): **Email to fgc@fgc.ca.gov; deliver to California Fish and Game Commission, 1416 Ninth Street, Room 1320, Sacramento, CA 95814; or hand-deliver to a Committee meeting.**

Written comments received at the Commission office by **5:00 p.m. on April 23, 2015**, will be made available to the Committee prior to the meeting. Written comments received **between April 23 and 12 noon on May 1, 2015**, will be made available to the Committee at the meeting. **After 12 noon on May 1**, five copies of written comments must be delivered at the meeting, otherwise they will not be made available to the Committee until after the meeting.

The Committee **will not** consider comments regarding proposed changes to regulations that have been noticed. If you wish to provide comment on an otherwise noticed item, please provide your comments during Commission meetings, via email, or deliver to the Commission office.

NOTE: Materials provided to the Committee may be made available to the general public.

SPEAKING AT THE MEETING

Committee meetings operate informally and provide opportunity for everyone to comment on agenda items. If you wish to speak on an agenda item, please follow these guidelines:

1. Raise your hand and wait to be recognized by the Committee co-chair(s).
2. Once recognized, please begin by giving your name and affiliation (if any) and the number of people you represent.
3. Time is limited; please keep your comments concise so that everyone has an opportunity to speak.
4. If there are several speakers with the same concerns, please try to appoint a spokesperson and avoid repetitive comments.
5. If you would like to present handouts or written materials to the Committee, please provide five copies to the designated staff member just prior to speaking.
6. If speaking during public forum, the subject matter you present should not be related to any item on the current agenda (public comment on agenda items will be taken at the time the Committee members discuss that item). As a general rule, public forum is an opportunity to bring matters to the attention of the Committee, but you may also do so via email, and standard mail. At the discretion of the Committee, staff may be requested to follow up on the subject you raise.

WHEN WILL MY AGENDA ITEM BE HEARD?
The Committee begins each session at the time listed on the agenda and generally considers each agenda item in the sequence listed, except in extraordinary circumstances.

VISUAL PRESENTATIONS/MATERIALS
All PowerPoint presentations must be submitted by May 1 at 12 noon and approved by the Commission executive director before the meeting.

1. All electronic formats must be Windows PC compatible.
2. Files created on a Mac are not supported.
3. It is recommended that a print copy of any electronic presentation be submitted in case of technical difficulties.
4. A data projector, laptop and presentation mouse will be available.

LASER POINTERS may only be used by a speaker during a presentation.

State of California
Department of Fish and Wildlife

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2015 MAY 29 AM 10: 30

Memorandum

Date: May 27, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: Emergency Statement to Add Section 8.01, Title 14, California Code of Regulations, Re: Measures for Fisheries at Risk due to Drought Conditions

The hydrological conditions in 2015 are expected to deteriorate from the record low 2014 conditions. Consequently, environmental conditions resulting from the drought may require temporary restrictions on fishing to protect fish populations and sustain future opportunity. In response to the continued extreme drought conditions, the Department of Fish and Wildlife (Department) and the Fish and Game Commission (Commission) have determined that a new approach is needed to give the Department effective tools to provide quicker response to the deteriorating water quality and quantity conditions in California's rivers, lakes and streams for 2015.

To ensure that fisheries are protected under critical conditions stemming from the drought, the Department is proposing a set of triggers to guide fishing closure and reopening actions. Closures would be based on the most current information available collected by professional staff trained in the associated fields. Criteria would be monitored at specific sites with an emphasis on listed fish species, species of special concern, and gamefish.

The proposed emergency regulation would authorize the department to close a water of the state to angling if the director, or his or her designee, determines one or more the following conditions have been met:

- Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days.
- Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.
- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.
- Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.
- Adult breeding population levels are estimated to be below 500 individuals.

The regulation would further provide that closed waters will be reopened by the Department when the Director, or his or her designee, determines all of the following conditions have been met:

- Water temperatures in occupied habitat do not exceed 70° Fahrenheit for over eight hours a day for seven consecutive days.
- Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level for seven consecutive days.
- Fish passage is available and that no impediment exists to strand or concentrate adults or juveniles during their migration.
- Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.
- Adult breeding populations are estimated to be recovered to greater than 500 individuals.

Justification and associated data for closure and reopening decisions will be provided to the Commission for any water that is subject to a fishing closure.

The Department and the Commission will work together to formulate a regular rulemaking proposal that will refine the approach and regulatory language based on experiences learned, feedback from the public, and revisions to increase the efficacy of this emergency action.

If you have any questions regarding this item, please contact Stafford Lehr, Chief, Fisheries Branch, by telephone at (916) 327-8840 or by e-mail at Stafford.Lehr@wildlife.ca.gov. The public notice for this rulemaking should identify Roger Bloom, Fisheries Program Manager, as the Department's point of contact. Mr. Bloom can be reached at (916) 445-3777.

Attachments

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CALIFORNIA FISH AND GAME COMMISSION
STATEMENT OF PROPOSED EMERGENCY REGULATORY ACTION

Emergency Action to
Add Section 8.01,
Title 14, California Code of Regulations
Re: Special Measures for Fisheries at Risk due to Drought Conditions

I. Statement of Facts Constituting the Need for Emergency Regulatory Action

California continues to suffer under severe drought conditions with record low snow packs in 2014 and 2015. In early 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency for California directing state officials to take all necessary actions to prepare for the record level of drought conditions and also signed an Executive Order redoubling state drought actions with additional measures to strengthen the state's response to drought. On April 1, 2015, the Governor ordered state agencies to impose statewide mandatory water restrictions that will save water, increase enforcement against water waste, streamline the state's drought response, and invest in new drought resilient technologies for California.

The hydrological conditions in 2015 are expected to deteriorate from the record low 2014 conditions. The Department of Fish and Wildlife (Department) continues to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest.

Statewide water quality and quantity in many systems is likely to be inadequate to support fisheries as the summer progresses, resulting in impeded passage of spawning fish, increased vulnerability to mortality from predation and physiological stress, and increased angling harvest and/or hooking mortality. Furthermore, survival of eggs and juvenile fish in these systems over the coming months will be extremely low. The historically low water conditions will concentrate coldwater fish populations into shrinking pools of cold water habitat making them easy prey for illegal angling methods such as snagging, increased hooking mortality due to legal catch and release, over-harvest, as well as other human-related disturbances within their freshwater habitat. When coupled with drought-related environmental stressors, such as high water temperature, low dissolved oxygen, and severely reduced suitable habitat, these stressors can seriously affect reproductive success and survival rates.

Since 2014, the Department has worked with the Fish and Game Commission (Commission), using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist. The Department and the Commission have determined that a temporary approach is needed to give the Department effective tools to respond more rapidly to the deteriorating water quality and quantity conditions in California's waters for 2015.

Regulatory Proposal
Environmental conditions resulting from the drought may require temporary restrictions on fishing to protect fish populations and sustain future opportunity. These conditional changes may affect each waterbody and fish population differently based on hydrological responses to the drought. Increased angling mortality, harvest, and angling pressure are the key components used to evaluate potential effects associated with degraded environmental conditions and will need to be evaluated on a water by water basis and over time as conditions change.

To ensure that fisheries are protected under critical conditions stemming from the drought, the Department is proposing a set of triggers to guide fishing closure and reopening decisions. The Department's decision to close or open a water will be based on the most current information available, collected by professional staff trained in the associated fields. Criteria for evaluating aquatic conditions are based on site-specific monitoring efforts with an emphasis on listed fish species, species of special concern, and gamefish.

The following proposed criteria will be used to determine if an emergency fishing closure or associated reopening is warranted:

Any water of the state not currently listed in Section 8.00 of these regulations may be closed to fishing by the Department when the Director, or his or her designee, determines one or more the following conditions have been met:

- Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days.
- Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.
- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.
- Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.
- Adult breeding population levels are estimated to be below 500 individuals.

All waters closed pursuant to this section will be reopened by the Department when the Director, or his or her designee, determines all of the following conditions have been met:

- Water temperatures in occupied habitat do not exceed 70° Fahrenheit for over eight hours a day for seven consecutive days.
- Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level for seven consecutive days.
- Fish passage is available and that no impediment exists to strand or concentrate adults or juveniles during their migration.

- Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.
- Adult breeding populations are estimated to be recovered to greater than 500 individuals.

Justification and associated data for closure and reopening decisions will be provided to the Commission for any water that is subject to a fishing closure.

The Department and the Commission will work together to formulate a regular rulemaking proposal that will refine the approach and associated language based on experiences learned, feedback from the public, and revisions to increase the efficacy of this emergency action.

II. Impact of Regulatory Action

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following determinations relative to the required statutory categories have been made:

(a) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(b) Nondiscretionary Costs/Savings to Local Agencies:

None.

(c) Programs Mandated on Local Agencies or School Districts:

None.

(d) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(e) Effect on Housing Costs:

None.

III. Authority and Reference

The Fish and Game Commission proposes this emergency action pursuant to the authority vested by sections 200, 202, 205, 240, and 315 of the Fish and Game Code and to implement, interpret, or make specific sections 200, 202, 205, 240, and 315 of said Code.

IV. Section 240 Finding

Pursuant to Section 240 of the Fish and Game Code, the Commission finds that the adoption of this regulation is necessary for the immediate conservation, preservation, or protection of birds, mammals, reptiles, or fish, including, but not limited to, any nests or eggs thereof.

Informative Digest (Plain English Overview)

California continues to suffer under severe drought conditions with record low snow packs in 2014 and 2015. In early 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency for California directing state officials to take all necessary actions to prepare for the record level of drought conditions and also signed an Executive Order redoubling state drought actions with additional measures to strengthen the state's response to drought. On April 1, 2015, the Governor ordered state agencies to impose statewide mandatory water restrictions that will save water, increase enforcement against water waste, streamline the state's drought response, and invest in new drought resilient technologies for California.

The hydrological conditions in 2015 are expected to deteriorate from the record low 2014 conditions. The Department of Fish and Wildlife (Department) continues to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest.

Statewide water quality and quantity in many systems is likely to be inadequate to support fisheries as the summer progresses, resulting in impeded passage of spawning fish, increased vulnerability to mortality from predation and physiological stress, and increased angling harvest and/or hooking mortality. Furthermore, survival of eggs and juvenile fish in these systems over the coming months will be extremely low. The historically low water conditions will concentrate coldwater fish populations into shrinking pools of cold water habitat making them easy prey for illegal angling methods such as snagging, increased hooking mortality due to legal catch and release, over-harvest, as well as other human-related disturbances within their freshwater habitat. When coupled with drought-related environmental stressors, such as high water temperature, poor water quality, and severely reduced suitable habitat, these stressors can seriously affect reproductive success and survival rates.

Since 2014, the Department has worked with the Fish and Game Commission (Commission), using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist. The Department and the Commission have determined that a temporary approach is needed to give the Department effective tools to respond more rapidly to the deteriorating water quality and quantity conditions in California's rivers and streams for 2015.

The following proposed criteria will be used to determine if an emergency fishing closure or associated reopening is warranted:

> Any water of the state not currently listed in Section 8.00 of these regulations may be closed to fishing by the Department when the Director, or his or her designee, determines one or more of the following conditions have been met:
>
> - Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days.

- Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.
- Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.
- Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.
- Adult breeding population levels are estimated to be below 500 individuals.

All waters closed pursuant to this section will be reopened by the Department when the Director, or his or her designee, determines all of the following conditions have been met:

- Water temperatures in occupied habitat do not exceed 70° Fahrenheit for over eight hours a day for seven consecutive days.
- Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level for seven consecutive days.
- Fish passage is available and that no impediment exists to strand or concentrate adults or juveniles during their migration.
- Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.
- Adult breeding populations are estimated to be recovered to greater than 500 individuals.

Justification and associated data for closure and reopening decisions will be provided to the Commission for any water that is subject to a fishing closure.

The Department and the Commission will work together to formulate a regular rulemaking proposal that will refine the approach and regulatory language based on experiences learned, feedback from the public, and revisions to increase the efficacy of this emergency action.

Benefits: The proposed regulation will provide benefits to the environment through the conservation and preservation of listed species, species of special concern, and gamefish populations.

The proposed regulations are neither inconsistent nor incompatible with existing state regulations. The Legislature has delegated authority to the Commission to promulgate sport fishing regulations (sections 200, 202, 205, 240, and 315 Fish and Game Code).

Regulatory Language

Section 8.01, Title 14, CCR is amended to read:

Section 8.01. Special ~~Gear Provisions~~Measures for Fisheries at Risk due to Drought Conditions.

(a) In response to continued extreme drought conditions, the commission has established a quick response process to temporarily close fisheries experiencing degraded environmental conditions that may affect fish populations or their habitat within waters of the state. The criteria set forth in subsections (b) and (c) are intended to ensure that fisheries are protected under critical conditions stemming from the drought. These criteria will be monitored in statewide inland fisheries, and they will be evaluated on a water by water basis over time as conditions change.

(b) The department may close to angling any waters of the state not currently listed in Section 8.00 of these regulations if the director, or his or her designee, finds one or more of the following conditions have been met:

(A) Water temperatures in occupied habitat exceed 70° Fahrenheit for over eight hours a day for three consecutive days

(B) Dissolved oxygen levels in occupied habitat drop below 5 mg/L for any period of time over three consecutive days.

(C) Fish passage is impeded or blocked for fish species that rely on migration as part of a life history trait.

(D) Water levels for ponds, lakes and reservoirs drop below 10% of their capacity.

(E) Adult breeding population levels are estimated to be below 500 individuals.

(c) Waters closed pursuant to subsection (b) shall be reopened by the department when the director, or his or her designee, finds all of the following conditions have been met:

(A) Water temperatures in occupied habitat do not exceed 70° Fahrenheit over eight hours a day for seven consecutive days

(B) Dissolved oxygen levels in occupied habitat rise above 5 mg/L and are maintained at that level over seven consecutive days.

(C) Fish passage is available and no impediment exists to strand or concentrate adults or juveniles during their migration.

(D) Water levels for ponds, lakes and reservoirs have recovered to greater than 10% of their capacity.

(E) Adult breeding population levels are estimated to be recovered to greater than 500 individuals.

(d) It shall be unlawful to take fish in any waters of the state closed to angling pursuant to this Section.

(e) Notification of department actions.

(1) The department shall maintain a list of closed waters of the state and update that list on Wednesday of each week by 1:00 pm. In the event that water conditions change later in the week, the fishing status for each specific water will not change until the day following the next Wednesday. It shall be the responsibility of the angler to use the telephone number provided on the department's website to obtain the current status of any water. The number to call for information is (916) 445-7600.

Note: Authority cited: Sections 200, 202~~ and 210~~, 205, 240, and 315, Fish and Game Code. Reference: Sections 200, 202, 205~~ and 210~~, 240, and 315, Fish and Game Code.

State of California
Department of Fish and Wildlife

Memorandum

2015 MAY 28 PM 1:01
RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

Date: May 26, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: Emergency Statement to Amend Subsection (b)(118) of Section 7.50, Title 14, California Code of Regulations, Re: Emergency Angling Closure Due to Low Flow Conditions

The Department of Fish and Wildlife (Department) is proposing to temporarily close the lower Merced River to angling. The proposed regulatory change would implement an emergency closure of the Merced River through December 31, 2015 from Crocker-Huffman Dam (C-H Dam) downstream to the Snelling Road bridge, a distance of approximately 5.5 miles, to increase survival of adult wild rainbow trout/steelhead by reducing hooking-related mortality.

In April 2015, Merced Irrigation District (Merced ID) notified the Department that it will not deliver water to its Main Canal this water year due to drought related lack of storage. The Department is concerned that the combination of a lack of a Merced ID delivery season combined with a minimum pool reduction will result in elevated water temperatures in the reach of Merced River downstream of C-H Dam where rainbow trout reside.

On the lower Merced River, historically low stream flows have concentrated juvenile and adult wild rainbow trout/steelhead into shrinking pools of cold water making them easy prey for poachers. These fish are particularly vulnerable to illegal angling methods such as snagging, and they experience increased hooking mortality due to legal catch and release angling targeting hatchery trout and steelhead. In addition, these fish experience other human-related disturbances within their spawning habitats. When coupled with drought-related environmental stressors, such as high water temperature, poor water quality, and severely reduced suitable habitat, these human stressors can seriously affect reproductive success and adult survival rates.

The Department believes that, under these extreme conditions, it is prudent to temporarily close the lower Merced River to angling in order to eliminate angling as an additional stressor on the existing rainbow trout/steelhead population. This stream closure will also serve to deter poaching and snagging activity since all angling will be prohibited. The proposed action is necessary to conserve the wild rainbow trout/steelhead population by protecting as many adult fish as possible.

If you have any questions regarding this item, please contact Stafford Lehr, Chief, Fisheries Branch, by telephone at (916) 327-8840 or by e-mail at Stafford.Lehr@wildlife.ca.gov. The public notice for this rulemaking should identify Dean Marston, Fisheries Program Manager, as the Department's point of contact. Mr. Marston can be reached at (559) 243-4005 ext. 122.

Attachments

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CALIFORNIA FISH AND GAME COMMISSION
STATEMENT OF PROPOSED EMERGENCY REGULATORY ACTION

Emergency Action to
Amend subsection (b)(118) of Section 7.50,
Title 14, California Code of Regulations
Re: Emergency Angling Closure Due to Low Flow Conditions

I. Statement of Facts Constituting the Need for Emergency Regulatory Action

California continues to suffer under severe drought conditions. In early 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency for California directing state officials to take all necessary actions to prepare for the record level of drought conditions and also signed an Executive Order redoubling state drought actions with additional measures to strengthen the state's response to drought.

On April 1, 2015 following the lowest snowpack ever recorded and no projected end to the drought conditions in sight, Governor Edmund G. Brown Jr. ordered state agencies to impose statewide mandatory water restrictions that will save water, increase enforcement against water waste, streamline the state's drought response, and invest in new technologies that will make California more drought resilient.

The Department of Fish and Wildlife (Department) continues to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest. The Department is also working with the Fish and Game Commission, using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist.

The Department conducts statewide monitoring of rivers and streams that are subject to these historically low flow conditions. Flows in many river systems will become inadequate as summer progresses, impeding passage of spawning adults, subjecting them to physiological stress, increasing their vulnerability to mortality from both predation and increased angling harvest and/or hooking related stress. Furthermore, survival of eggs and juvenile fish in these systems over the coming months is likely to be extremely low as the current drought conditions continue.

The historically low stream flows have concentrated juvenile and adult wild rainbow trout/steelhead into shrinking pools of cold water making them easy prey for poachers. These fish are particularly vulnerable to illegal angling methods such as snagging, and they experience increased hooking mortality due to legal catch and release angling targeting hatchery trout and steelhead. In addition, these fish experience other human-related disturbances within their spawning streams. When coupled with drought-related environmental stressors, such as high water temperature, poor water quality, and severely reduced suitable

habitat, these human stressors can seriously affect reproductive success and adult survival rates.

Merced River

Both resident and anadromous (steelhead) rainbow trout exist in the Merced River downstream of Crocker-Huffman Dam (C-H Dam). C-H Dam is located approximately seven miles downstream of Lake McClure and is the impoundment structure necessary for Merced Irrigation District (Merced ID) to divert water into its Main Canal. Water temperatures in the reach of the lower Merced River downstream of C-H Dam are of concern during the late spring through early fall time period, and are influenced in large part by water supply, Merced ID's water conveyance system and delivery operations (a.k.a. release schedule), and minimum instream flow schedule levels. In April 2015, Merced ID notified the Department that it will not deliver water to its Main Canal this water year due to drought-related lack of storage. To clarify, in the absence of Merced ID delivering water to its Main Canal, water in the Merced River warms rapidly during the summer months prior to reaching C-H Dam because of the reduced amount of water traveling through the reach of the Merced River located between Exchequer Dam and C-H Dam (i.e., reduced flow volume warms more quickly than elevated flow volume).

The Department is concerned that the combination of a lack of a Merced ID delivery season combined with a minimum pool reduction will result in elevated water temperatures in the reach of Merced River downstream of C-H Dam where rainbow trout reside. In response to this concern, the Department has conducted rainbow trout (*Oncorhynchus mykiss*) population, and fishery habitat quality monitoring efforts in the lower Merced River during the spring and summer of 2014 and the spring of 2015. The purpose of these monitoring efforts is to identify the number of rainbow trout in the anadromous reach of the lower Merced River, and to determine the water temperature quality of the over summering habitat available to rainbow trout in this river reach. Through these data collection efforts, the Department has learned that the available habitat area on the lower Merced River is shrinking as air temperatures increase during the summer, and that rainbow trout population abundance is also shrinking. It has become apparent that rainbow trout are moving upstream to find water temperature refugia, but fewer trout are being detected over time as this upstream migration occurs.

The Department believes that the number and condition of rainbow trout will continue to decline through the summer and early fall, due to drought-related instream flow reductions that have resulted in low instream flow levels and warmer water temperatures. As rainbow trout move upstream to seek cooler water they become isolated in a narrower reach of the lower Merced River making them susceptible to increased angling pressure. Even though the current regulations are designed for non-lethal catch and release, additional angling pressure on already stressed rainbow trout will substantially increase the likelihood that the relatively few surviving rainbow trout will die.

The Department believes that, under these extreme conditions, it is prudent to temporarily close the lower Merced River to angling in order to eliminate angling as an additional stressor on the existing rainbow trout population. This stream closure will also serve to deter poaching and snagging activity since all angling will be prohibited. The proposed action is necessary to conserve the wild rainbow trout/steelhead population by protecting as many adult fish as possible.

Subsection 7.00(e) provides the seasons, size, and bag and possession limits for trout and salmon for waters in the South Central District which are not otherwise specified in Section 7.50. Subsection 7.50(b)(118) provides the season, size, bag and possession limits for trout occurring in the anadromous reach of the lower Merced River.

The following proposed regulatory changes would implement the emergency angling closure through December 31, 2015 to increase survival of juvenile and adult wild rainbow trout/steelhead by reducing hooking-related mortality.

Section 7.50(b)(118) would be amended to include:

- Complete fishing closure from Crocker-Huffman Dam downstream to the Snelling Road bridge, a distance of approximately 5.5 miles, through December 31.

- From the Snelling Road bridge downstream to the Schaffer bridge on Oakdale Road. This section will remain open to fishing through October 31 with existing gear restrictions and bag and possession limits.

- From the Schaffer bridge on Oakdale Road downstream to the mouth. This section will remain open to fishing through October 31 with existing gear restrictions and bag and possession limits.

Additional streams closures are currently being evaluated by the Department for future actions as needed.

II. Impact of Regulatory Action

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following determinations relative to the required statutory categories have been made:

(a) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(b) Nondiscretionary Costs/Savings to Local Agencies:

None.

(c) Programs Mandated on Local Agencies or School Districts:

None.

(d) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(e) Effect on Housing Costs:

None.

III. Authority and Reference

The Fish and Game Commission proposes this emergency action pursuant to the authority vested by sections 200, 202, 205, 215, 220, 240, 315, and 316.5 of the Fish and Game Code, and to implement, interpret, or make specific Fish and Game Code sections 200, 202, 205, , 215, 220, and 315.

IV. Section 240 Finding

Pursuant to Section 240 of the Fish and Game Code, the Commission finds that the adoption of this regulation is necessary for the immediate conservation, preservation, or protection of birds, mammals, reptiles, or fish, including, but not limited to, any nests or eggs thereof.

Informative Digest (Plain English Overview)

California continues to suffer under severe drought conditions. In early 2014, Governor Edmund G. Brown Jr. proclaimed a State of Emergency for California directing state officials to take all necessary actions to prepare for the record level of drought conditions and also signed an Executive Order redoubling state drought actions with additional measures to strengthen the state's response to drought.

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Since 2014, the Department of Fish and Wildlife (Department) has continued to evaluate and manage the changing impacts of drought on threatened and endangered species and species of special concern, and develop contingency plans for state Wildlife Areas and Ecological Reserves to manage reduced water resources in the public interest. The Department is also working with the Fish and Game Commission, using the best available science, to determine whether restricting fishing in certain areas will become necessary and prudent as drought conditions persist.

The Department conducts statewide monitoring of rivers and streams that are subject to these historically low flow conditions. Flows in many river systems will become inadequate as summer progresses, impeding passage of spawning adults, subjecting them to physiological stress, increasing their vulnerability to mortality from both predation and increased angling harvest and/or hooking related stress. Furthermore, survival of eggs and juvenile fish in these systems over the coming months is likely to be extremely low as the current drought conditions continue.

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Merced River

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The following proposed regulatory changes would implement the emergency closure through December 31, 2015 to increase survival of juvenile and adult wild rainbow trout/steelhead by reducing hooking-related mortality.

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- From the Schaffer bridge on Oakdale Road downstream to the mouth. This section will remain open to fishing through October 31 with existing gear restrictions and bag and possession limits.

Additional streams closures are currently being evaluated by the Department for future actions as needed.

Benefits: The proposed regulation will provide benefits to the environment through the conservation and preservation of steelhead and wild rainbow trout populations.

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. The Legislature has delegated authority to the Commission to promulgate sport fishing regulations (sections 200, 202, 205, 315, and 316.5, Fish and Game Code).

Regulatory Language

§7.50. Alphabetical List of Waters with Special Fishing Regulations.

Subsection (b)(118) of 7.50, Title 14, CCR is amended to read:

Body of Water	***Open Season and Special Regulations***	***Daily Bag and Possession Limit***
(118) Merced River (Merced Co.).		
(A) From Crocker-Huffman Dam downstream to the ~~Schaffer bridge on Oakdale Road.~~ Snelling Road bridge, a distance of approximately 5.5 miles.	Jan. 1 through ~~Oct. 31~~[OAL to insert effective date]. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
	Closed to all fishing [OAL to insert effective date] through Dec. 31.	
(B) From the Snelling Road bridge downstream to the Schaffer bridge on Oakdale Road.	Jan. 1 through Oct. 31. Only artificial lures with barbless hooks may be used.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession
(~~B~~C) From the Schaffer bridge on Oakdale Road downstream to the mouth.	Jan. 1 through Oct. 31. Bait may be used from Jan. 1 through Oct. 31. However, from April 1 through the Friday preceding the fourth Saturday in May, bait may be used only with single hooks having a gap between 1/2 and 1 inch, or with multiple hooks having a gap between 1/4 and 1/2 inch.	2 hatchery trout or hatchery steelhead** 4 hatchery trout or hatchery steelhead** in possession

* Wild Chinook salmon are those not showing a healed adipose fin clip and not showing a healed left ventral fin clip.
**Hatchery trout or steelhead in anadromous waters are those showing a healed adipose fin clip (adipose fin is absent). Unless otherwise provided, all other trout and steelhead must be immediately released. Wild trout or steelhead are those not showing a healed adipose fin clip (adipose fin is present).
Note: Authority cited: Sections 200, 202, 205, 215, 220, 240, 315 and 316.5, Fish and Game Code. Reference: Sections 200, 202, 205, 206, 215, 315, and 316.5, Fish and Game Code.

Draft California Policy for Native Plants

The California Fish and Game Commission recognizes the following:

1. The management and conservation of California's native flora are important to the State of California, and native plants, as vital components of the State's natural wildlife communities, are held in trust for the people of the State by and through the Department of Fish and Wildlife. [FGC Sec. 711.2(a), 711.7(a), and Sec. 1600]
2. 'Native plants' are generally defined as plants that occur naturally in California without direct or indirect human actions.
3. The California State Legislature recognized the essential value and importance of California native plants to the State's history, economy, landscape, and environment, as declared in Assembly Concurrent Resolution 173 (2010).
4. The State's policies and practices regarding native plants are in need of review and updating. More than 30 years ago state law focused on transplantation as a means of mitigating for listed plant species, however experience and numerous studies document that such practices are largely ineffectual over time and often damaging to species or population survival.
5. Growing concern for the effects of wild land fires continues to raise questions and uncertainty regarding appropriate course of action on such issues as fuels management, post fire salvage and seeding, among other actions that may have significance for native plant conservation.
6. It is incumbent upon the Commission and the Department to address the differing public agency opinions and ideas regarding native plant conservation objectives, survey and mitigation standards, genetic degradation, habitat protection, and other native plant issues. Better coordination between state agencies is necessary to overcome institutional and budget constraints.

Therefore, it is the policy and practice of the Fish and Game Commission that:

- The Commission shall encourage, support, and implement, on its own initiative and with the Department of Fish and Wildlife, strategies and tools to conserve native plants as integral elements of the State's wildlife. The Commission shall consider, as appropriate, native plant conservation when carrying out duties which may have a relevant link to plant conservation.
- Incorporating and using current scientific techniques, tools, and standards in the conservation of native plants is necessary to protect the integrity of natural communities and wildlife resources, make land use decisions, and meet the needs of human communities.
- Conservation planning and management for native plants require proactive approaches that address both naturally occurring and human-induced stressors.
- Data collection and sharing among public and private entities coupled with improved data analysis is critical to successful native plant conservation. This requires adequately trained and experienced human resources being available to the Department and other responsible parties.
- Laws, public policies, and natural resource management practices of public agencies, with regard to native plants, need to be reviewed, modernized, and coordinated to ensure consistent and effective native plant conservation based on current scientific and societal needs and understanding.

DRAFT

Assembly Concurrent Resolution 173

INTRODUCED BY Assembly Member Noreen Evans

(Coauthors: Assembly Members Adams, Ammiano, Arambula, Bass, Beall, Bill Berryhill, Tom Berryhill, Blakeslee, Blumenfield, Bradford, Brownley, Buchanan, Charles Calderon, Carter, Coto, DeLa Torre, De Leon, Eng, Feuer, Fong, Fuentes, Furutani, Hall, Hayashi, Hill, Huffman, Jones, Lieu, Bonnie Lowenthal, Ma, Mendoza, Monning, Nava, John A. Perez, V. Manuel Perez, Ruskin, Salas, Saldana, Skinner, Solorio, Audra Strickland, Swanson, Torlakson, Torres, Torrico, Tran, Villines, and Yamada)

Relative to Native Plant Week

WHEREAS, California's native plants provide unparalleled and unique iconic, economic, artistic, historical, and environmental values to the state; and

WHEREAS, California's over 6,000 native plant species, subspecies, and varieties, of which over 2,150 exist only in California, make California home to more diverse plant life than all other states combined; and

WHEREAS, California's native plants include some of the oldest, tallest, and most massive living things on Earth; and

WHEREAS, The Department of Fish and Game recognizes nearly one-quarter of California's native plants as "special status plants" that warrant additional protections; and

WHEREAS, California currently contends with over 1,000 nonnative plants, some of which compete with native plant species, degrade soil, facilitate erosion and catastrophic wildfire, and alter the state's natural landscapes; and

WHEREAS, Many native California plants have played a vital role in the history of our state and our nation, compelling Congress, the Legislature, and many communities to protect the beauty, power, and grandeur of our wild places; and

WHEREAS, California's first Indian nations lived and thrived by their knowledge of native California plants, which provided them with food, clothing, shelter, dyes, tools, medicines, and fuel for centuries; and

WHEREAS, California's citizens have consistently supported efforts to protect our wild landscapes, including numerous areas within the Coast Redwoods, the Sierra Nevada Mountain range, and the Mojave Desert, spurring a conservation and environmental awareness that helps define California today; and

WHEREAS, California's native plants have played a vital role in inspiring the creation and management of our National Park Service, including President Lincoln's 1864 signing of the Yosemite and Mariposa Big Tree Grove Grant to California, designating a park "to be held for public use, resort, and recreation ... inalienable for all time," and the adoption of the Sequoia cone as an official insignia of the National Park Service; and

WHEREAS, In 1899, 1903, and 1904, members of the 9th Cavalry and 24th Infantry Buffalo Soldier regiments were dispatched to Sequoia and Yosemite national parks, where they protected giant sequoias from illegal logging, built trails and fences to enhance visitors' experiences among the giant trees while protecting park resources, and developed the first museum in a national park, a California native plant arboretum in Yosemite Valley; and

WHEREAS, An interest in protecting California's native plants has played a vital role in the creation of many California state and regional parks, including California's oldest state park, Big Basin, created in 1902 to protect old growth Coast Redwood forests; and

WHEREAS, The impact of California's landscape has influenced literary and artistic works, including the works of Mark Twain, John Steinbeck, Ansel Adams, and many other internationally known figures, furthering California's legacy; and

WHEREAS, California's native plants have provided and continue to provide foods, medicines, and other products, from the origins of California's strawberry industry to Taxol for cancer treatment; and

WHEREAS, California native plant horticulture is a thriving, vital, and growing industry employing thousands of Californians, and the benefits to water conservation and natural area restoration help provide economic stability within the state; and

WHEREAS, California's native plants provide essential watershed protections by helping to recharge natural aquifers, filtering water flowing through mountains, hills, and valleys, lessening erosion and flooding, and enabling efforts to beautify and renew our state; and

WHEREAS, Gardens and landscapes comprised of California native plants, being perfectly suited to California's climate and soil, require far fewer fertilizers, soil amendments, or pesticides, and use 60 to 90 percent less water than conventional landscapes, exemplified by a City of Santa Monica experiment, in which a native plant garden using appropriate watering methods was shown to use nearly 220,000 fewer gallons of water than a similarly sized conventional garden, a 77 percent decrease in water use; and

WHEREAS, Restoring California native plants provides natural links to wild land areas, while introducing people to their beauty and instilling a greater understanding and appreciation for California's natural heritage; now, therefore, be it

RESOLVED by the Assembly of the State of California, the Senate thereof concurring, That the Legislature recognizes the essential value and importance of California native plants to our history, economy, landscape, and environment; and be it further

RESOLVED, That the California Legislature encourages community groups, schools, and citizens to undertake appropriate activities to promote native plant conservation and restoration, and to inform their neighbors and communities of the value of native plants in nature and in horticultural settings; and be it further

RESOLVED, That the California Legislature hereby declares the third week of April, each year, as **California Native Plant Week**; and be it further

RESOLVED, That the Chief Clerk of the Assembly transmit copies of this resolution to the author for appropriate distribution.

Adopted by the California Assembly, August 2, 2010
Adopted by the California Senate, August 27, 2010

State of California

Memorandum

Date: ~~May~~ April 12, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham, Director
Department of Fish and Wildlife

Subject: Agenda Item for the June 10 -11, 2015, Fish and Game Commission Meeting
Duck Stamp Proposals for FY 2015-2016

Pursuant to Fish and Game Code § 3702-3705, the Department of Fish and Wildlife (Department) submits the attached summary of proposed projects to the Fish and Game Commission (Commission) for consideration and approval for funding with Duck Stamp Dedicated Account funds in Fiscal Year (FY) 2015-16. These projects were reviewed by the Department and the Duck Stamp Advisory Committee.

As in past years, the Duck Stamp Dedicated Account carries a surplus balance. This surplus is the result of projects not completed due to permitting issues, contract development issues, or cost savings. It is estimated the Account's beginning balance will be $3,067,469 on July 1, 2015, with estimated revenue of $1,315,469 from the sale of duck stamps during FY 2014-15. The Department proposes to spend revenues to accomplish the goals established for the Duck Stamp Dedicated Account as authorized.

For FY 2015-16, spending authority for expenditures from this fund are $1,804,000. After deducting the required administrative overhead costs (limited to 6% per §3701 or $90,420), the mandated amount portioned to Canada ($2.25 per stamp/validation per §3704 or $134,377), and $297,000 to capital outlay projects a total of $1,282,203 is available for new and ongoing projects.

The Department reviewed 19 project proposals totaling nearly $1.8 million dollars. The attached list of recommended projects includes ongoing projects (approved in past years) recommended for continued authorization. The proposals include 3 capital outlay projects that were originally approved for FY 2013-14 but required Department of Finance approval. The new and ongoing projects in California total $1,282,203. This figure includes contingency funding to allow for emergencies (e.g. drought related) or project costs that differ slightly from the original estimates.

As always, the Department appreciates the Commission's consideration of our proposal and requests its approval for funding of the noted projects totaling $1,804,000.

If you have any questions regarding this item, please contact Dr. Eric Loft, Chief, Wildlife Branch, at (916) 445-3555.

Attachment

ec: Department of Fish and Wildlife

Eric Loft, Ph. D. Chief
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Craig Stowers, Game Program Manager
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Valinda Roberts, Chief
Budget Branch
Valinda.Roberts@Wildlife.ca.gov

FILE: D, DD-WFD

Summary of Department Recommendations
For FY 2015-16 California Duck Stamp

Canada Habitat Project:

Wetland and Upland Conservation – Alberta, Canada $134,377
Establish a conservation easement and or restore wetlands associated with key breeding uplands in Alberta for pintail. Specific project parameters are still in development with the landowner. This project will also be matched by North America Wetland Conservation Act dollars.

Capital Outlay Projects – California:

UBB Wildlife Area – Howard Slough fields 228, 230, 231, 334 ..... $113,086
Originally approved for 2013-14 FY – capital outlay project. Create 15 and enhance 92 wetland acres by building levees, swales, potholes, islands and installing water structures.

Gray Lodge Wildlife Area – Field 28 ..... $101,896
Originally approved for 2013-14 FY – capital outlay project. Create 28 wetland acres and enhance 28.5 wetland and 26 upland acres by building levees, swales, islands, plantings and installing water structures.

Yolo Bypass Wildlife Area – Central 5 ..... $82,018
Originally approved for 2013-14 FY – capital outlay project. Enhance 162 wetland acres by building levees, swales, and islands.

Ongoing Projects – California:

Duck Banding (pintail) – California Waterfowl Association $35,000
This is a cooperative project to maintain sufficient banded samples of pintail to assess harvest and survival rates.

Duck Banding (mallard) $25,000
Mallard banding is used for the Western Mallard Model. The model is used to establish the duck hunting frameworks for most ducks in the Pacific Flyway.

CA VCF Portion of Breeding Pop Survey – $25,000
This project will continue the survey to estimate visibility correction factors for the waterfowl breeding population survey in California.

Tule Greater White-fronted Goose Population Study $7,000
This project will continue ongoing population estimation, habitat use, and distribution of these special status geese by purchasing and marking birds with radio transmitters.

Department of Fish and Wildlife – Internal Expenditures $90,000
This funding provides the match for the Pittman Robertson Act funding for the Waterfowl Program in the Wildlife Branch.

Department of Fish and Wildlife – Duck Stamp Administration $3,000
The Department recommends these funds to complete the delivery of physical stamps to purchasers, as required under Fish and Game Code, and other administrative charges related to ALDS.

Department of Fish and Wildlife – Contingency Fund $63,230
The Department recommends this continuing funding to provide for small funding adjustments for authorized projects and to provide flexibility for emergencies (drought related or otherwise) as may occur.

New Projects – California:

Butte Valley Wildlife Area – Units 11B, 11D $115,555
Maintain 323 acres of wetlands by rebuilding swales, levees, and replacing water structures manner.

Honey Lake Wildlife Area – Dakin Unit $111,517
Maintain 1,311 wetland and 300 upland acres by cleaning water delivery ditch

Gray Lodge Wildlife Area – Field 73 ..... $156,457
Maintain 67 wetland and 3 upland acres by replacing water structures, refurbishment of levees, swales, and islands.

Gray Lodge Wildlife Area – Field 61 ..... $76,635
Maintain 74.3 wetland acres by replacing water structures and building islands, swales, and potholes.

Grizzly Island Wildlife Area – Pond 22 ..... $71,639
Maintain 130 wetland acres by re-contouring swales and rebuilding levees.

Yolo Wildlife Area – Parker Units $246,072
Enhance 271 wetland acres by installing a pump. This project is considered a capital outlay project which also requires the Department of Finance approval.

Eden Landing Ecological Reserve – Pond E10 ..... $113,304
Maintain 332 wetland acres by replacing water structures and installing riprap.

Genetic Stock Identification for Tule greater white-fronted geese $142,793
The Tule goose is a recognized subspecies of greater white-fronted geese that winter predominantly in the West Sacramento Valley and the Suisun and Napa marshes. The Tule goose population is small (estimated around 10,000 birds) and is designated a Bird Species of Special Concern. The small population size and wintering area require more restrictive harvest regulations and associated monitoring. Harvest monitoring takes place at the public hunt area check stations. This project will develop a genetic stock identification system that will assist in providing reliable harvest estimates of Tule geese.

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Sections 300 and 310.5
Title 14, California Code of Regulations
Re: Upland Game Birds and Shooting Hours for Upland Game Birds

I. Date of Initial Statement of Reasons: January 20, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: April 9, 2015
Location: Flamingo Conference Resort & Spa
2777 Fourth Street
Santa Rosa, CA

(b) Discussion Hearing: Date: June 11, 2015
Location: Mountainside Conference Center
1 Minaret Road
Mammoth Lakes, CA

(c) Adoption Hearing: Date: August 5, 2015
Location: River Lodge Conference Center
1800 Riverwalk Drive
Fortuna, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Existing regulations under Section 300 Title 14, California Code of Regulations (CCR), provide definitions, hunting zone descriptions, season opening and closing dates, and daily bag and possession limits for resident and migratory upland game birds. Existing regulations under Section 310.5 Title 14, CCR, establishes shooting times for all upland game birds. Sections 202 and 203 of the Fish and Game Code authorize the Fish and Game Commission to adopt regulations for resident upland game birds annually, which are under the sole jurisdiction of the state.

Existing regulations under subsection 300(b) Title 14, CCR, provide definitions, hunting zone descriptions, season opening and closing dates, and daily bag and possession limits for migratory upland game birds. Fish and Game Code Sections 202, 355 and 356 authorize the Fish and Game

Commission to annually adopt regulations pertaining to the hunting of migratory birds that conform with, or further restrict, the regulations prescribed by the United States Fish and Wildlife Service (USFWS) pursuant to their authority under the Migratory Bird Treaty Act. The Fish and Game Commission selects and establishes in State regulations the specific hunting season dates and daily bag limits within the federal frameworks.

Two proposals are evaluated for regulation changes as follows:

1. Amend subsection 300(a)(1)(D)4. Adjust annual number of sage grouse hunting permits by zone.

   Existing regulations provide for the number of sage grouse hunting permits in the East Lassen, Central Lassen, North Mono, and South Mono zones. For the 2015-2016 season, the Department of Fish and Wildlife (Department) has proposed a range of permits from which a final number of permits will be determined, based on spring lek counts. Ranges are necessary at this time because the final number of permits cannot be determined until spring lek counts are conducted in April. Current regulations provide permit numbers for sage grouse based on population estimates from 2014 and need to be updated to reflect 2015 estimates.

   In March 2010, the USFWS determined that sage grouse were "warranted, but precluded" for protection under the Endangered Species Act (ESA) both statewide and as a Distinct Population Segment (DPS) in Mono County. A proposed rule was scheduled on the range-wide finding for 2015, but has since been delayed by Congress and now it is not expected to occur in 2015.

   In October 2013, the USFWS proposed that the Bi-State DPS should be listed as threatened under the ESA. A final ruling, similar to the range-wide finding discussed above, is not expected in 2015. If this proposal becomes a final rule, the threatened status of the Bi-State DPS would preclude future hunting.

   The risks to sage grouse are largely habitat-based. Hunting was not considered a high risk factor in the "warranted, but precluded" finding for sage grouse range-wide by the USFWS, which does not preclude states from continued hunting. In fact, no states have closed hunting as the result of the range-wide ESA decision. The proposed listing rule for greater sage grouse range-wide will be made in fiscal year July 2015 – June 2016.

Concerns about the potential effects of hunting on sage grouse through additive mortality have been expressed in the scientific literature, including studies from California. The Department responded to these concerns by reducing recommended permit numbers substantially as adopted by the Commission in 2007. Since sage grouse were given candidacy under ESA in 2010, the Department has taken an increasingly conservative approach to recommending sage grouse hunting permits and has not recommended any increases in permits despite some of the highest spring breeding populations ever recorded in the Mono zones. The permit system used in California is considered one of the most conservative and best-controlled hunts in sage grouse range.

The Commission took emergency action in 2012 to reduce the number of permits for both the East Lassen and Central Lassen Hunt Zones to zero. This action was taken following the Rush Fire, which encompassed more than 272,000 acres in California, almost entirely within the East Lassen Zone. Because of substantial breeding population declines following the fire, the Department did not recommend any hunting permits in 2013 or 2014. Wildfire is considered one of the highest risks to sage grouse habitats, particularly in northeastern California.

The Department will continue to conduct intensive breeding population surveys in spring 2015, whereby male sage grouse will be counted on all known leks in California, including leks both within hunt zones and in non-hunted areas. These lek counts will be used to estimate population size and a population model will expand the count of males to predict the size of the fall population. The Department will use these data to determine the number of sage grouse hunting permits.

The Department recommendation for 2015 will fall within the following ranges:

	Current (2014) Limit	Proposed (2015) Range
a. East Lassen Zone (two-bird permits)	0	[0-50]
b. Central Lassen Zone (two-bird permits)	0	[0-50]
c. North Mono Zone (one-bird permits)	30	[0-100]
d. South Mono Zone (one-bird permits)	0	[0-100]

The numbers of permits ultimately recommended for each hunt zone will be based on the following criteria:

- Size and trend of the spring breeding population in each hunt zone based on lek counts conducted in March and April.

- The allowable harvest level will not exceed 5% of the predicted fall population.

- If the allowable harvest in any zone provides for a minimum number of permits to be recommended in any zone of 5 permits or less, no permits will be recommended for that zone.

2. Amend Section 310.5 to add one hour to the end of shooting time for spring turkey hunters.

   The shooting time for spring turkey hunting is currently established from one-half hour before sunrise to 4:00 pm. The addition of one hour is being proposed to provide additional hunting opportunity during the spring turkey hunting season. Spring shooting hours for wild turkey are cut off before sunset as a traditional wildlife management technique to allow the birds opportunities to breed and find roosts. Hunters have informally requested this increase to offset time lost when daylight saving was moved from April to March several years ago. The extension to 5:00 PM will still provide adequate protection for the spring breeding population.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 203, 355, and 3000 of the Fish and Game Code.

Reference: Sections 200, 202, 203, 203.1, 215, 220, 355, 356, and 3000 of the Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change:

- None.

(e) Public Discussions of Proposed Regulations Prior to Notice publication:

- Fish and Game Commission's Wildlife Resource Committee meeting held in West Sacramento, CA on January 14, 2015

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No Alternatives were identified.

(b) No Change Alternative:

Without a regulation change:

1. Sage grouse permit numbers would not change from 2014 and permits for 2015 would not be calculated based on current year data.

2. Shooting time for spring turkey hunting would not change; additional hunting opportunity would not be realized by adding an additional hour to the end of shooting time.

(c) Consideration of Alternatives: In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states, because the regulations propose only minor changes to bag limits and shooting hours.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment.

The Commission does not anticipate any impacts the proposed action would

have on the creation or elimination of jobs or businesses in California or on the expansion of businesses in California because the regulations propose only minor changes to bag limits and shooting hours. The Commission does not anticipate benefits to worker safety because the regulations do not address working conditions.

The Commission anticipates benefits to the health and welfare of California residents. The proposed regulations are intended to provide continued recreational opportunity to the public. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources.

The Commission anticipates benefits to the environment by the sustainable management of California's upland game resources. The fees that hunters pay for licenses and stamps are used for conservation.

(c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

(e) Nondiscretionary Costs/Savings to Local Agencies: None.

(f) Programs Mandated on Local Agencies or School Districts: None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

(a) Effects of the regulation on the creation or elimination of jobs within the state

Positive impacts to jobs and/or businesses that provide services to upland game bird hunters will be realized with the adoption of the proposed upland game bird hunting regulations for the 2015-16 season. This is based on the 2011 U.S. Fish and Wildlife National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for California (issued Feb. 2013). The report estimates that hunters contributed about $142,412,000 to small businesses

in California during the 2011 small game hunting season. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed regulations is to sustainably manage upland game bird populations, and consequently, the long-term viability of these same small businesses. The 2011 report is posted on the US Dept. of Commerce website at http://www.census.gov/prod/2013pubs/fhw11-ca.pdf.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the state

The result of the regulations on the creation of new businesses or the elimination of existing businesses within the state will be neutral. Minor variations in the season, bag limits, and shooting hours as may be established in the regulations are, by themselves, unlikely to stimulate the creation of new businesses or cause the elimination of existing businesses. The number of hunting trips and the economic contributions from them are expected to remain more or less the same.

(c) Effects of the regulation on the expansion of businesses currently doing business within the state

The long-term intent of the proposed regulations is to sustainably manage upland game bird populations, and consequently, the long-term viability of small businesses that serve recreational upland game bird hunters. The minor changes in bag limits and shooting hours in the proposed regulations are, by themselves, unlikely to stimulate the expansion of businesses within California.

(d) Benefits of the regulation to the health and welfare of California residents

Hunting is an outdoor activity that can provide several benefits for those who partake in it and for the environment as well. The fees that hunters pay for licenses and stamps are used for conservation. In addition, the efforts of hunters can help to reduce wildlife depredation on private lands. Hunters and their families benefit from fresh game to eat, and from the benefits of outdoor recreation. People who hunt have a special connection with the outdoors and an awareness of the relationships between wildlife, habitat, and humans. With that awareness comes an understanding of the role humans play in being caretakers of the environment. Hunting is a tradition that is often passed on from one generation to the next creating a special bond between family members and friends.

(e) Benefits of the regulation to worker safety

The regulations will not affect worker safety because they will not impact working conditions.

(f) Benefits of the regulation to the state's environment

It is the policy of this state to encourage the conservation, maintenance, and utilization of upland game bird resources for the benefit of all the citizens of the state. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of upland game birds to ensure their continued existence and the maintenance of a sufficient resource to support recreational opportunity. Adoption of scientifically-based upland game bird seasons, bag and possession limits provides for the maintenance of sufficient populations of resident and migratory upland game birds to ensure those objectives are met.

(g) Concurrence with other Statutory Requirements:

Not applicable

Informative Digest/Policy Statement Overview

Current regulations in Title 14, California Code of Regulations (CCR), provide general hunting seasons for taking resident and migratory upland game birds under Section 300. Current regulations in Title 14, CCR, under Section 310.5 establishes shooting times for all upland game birds. The Department of Fish and Wildlife (Department) is recommending two regulation changes under these sections as follows:

1. Adjust annual number of sage grouse hunting permits by zone.

   Current regulations under subsection 300(a)(1)(D)4. provide a number of permits for the general sage grouse season in each of four zones. At this time the Department has proposed a range of permits specific for all four hunt zones. The final permit numbers will be proposed in June after spring lek counts are completed and annual population data are analyzed. Permit ranges for sage grouse hunting in 2015 are recommended as follows:

   a. East Lassen: [0-50] (two-bird) permits
   b. Central Lassen: [0-50] (two-bird) permits
   c. North Mono: [0-100] (one-bird) permits
   d. South Mono: [0-100] (one-bird) permits

2. Increase shooting time provided for spring turkey hunters under Section 310.5 by one hour; shooting time would end at 5:00 pm instead of at 4:00 pm as provided under current regulation.

Benefits of the Proposed Regulations

Adoption of sustainable upland game seasons, bag and possession limits provides for the maintenance of sufficient populations of upland game to ensure their continued existence.

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200, 202, and 203, has the sole authority to regulate upland game bird hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to hunting of resident game birds are consistent with Sections 550-553, 630, 703 and 4501 of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing State regulations. No other State agency has the authority to adopt upland game bird hunting regulations in California.

REGULATORY LANGUAGE

Section 300, Title 14, is amended to read:

§ 300. Upland Game Birds.

. . . [No changes to subsections 300(a)(1)(A-C)]

Species	*1. Seasons*	*2. Daily Bag and Possession Limits*
(D) Sage Grouse	The second Saturday in September extending for two consecutive days	See area open zone descriptions in subsection 300(a)(1)(D)3. **East and Central Lassen zones**: Bag Limit: 2 sage grouse per day, 2 per season Possession Limit: 2 sage grouse per season **North Mono and South Mono zones**: Bag Limit: 1 sage grouse per day, 1 per season Possession Limit: 1 sage grouse per season

SAGE GROUSE HUNTING ZONE DESCRIPTIONS AND PERMIT PROCESS

3. Area Open Zone Descriptions:

a. **East Lassen Zone:**

That portion of Lassen County beginning at the intersection of Highway 395 and County Road 502 in the town of Ravendale; north and east on County Road 502 to County Road 526 (Buckhorn Road); east on County Road 526 to the Nevada state line; south along the Nevada state line to its intersection with County Road 320 (Wendel-Flanigan Road); northwest on County Road 320 to its intersection with Highway 395 between Wendel and Litchfield north on Highway 395 to the point of beginning.

b. **Central Lassen Zone:**

That portion of Lassen County beginning at the intersection of Highway 139 and County Road 513 (Termo-Grasshopper Road); east on County Road 513 to its intersection with County Road 523 (Westside Road); north on County Road 523 to its intersection with County Road 525 (Brockman Road); east on County Road 525 to its intersection with Highway 395; south on Highway 395 to its intersection with Highway

36 in the town of Johnstonville; west on Highway 36 to its intersection with Highway 139 in Susanville; north on Highway 139 to the point of beginning.

c. **North Mono Zone:**

That portion of Mono County beginning at the intersection of Highway 182 and the California-Nevada state line; south and east along the California-Nevada state line to Highway 167; west along Highway 167 to Highway 395; north along Highway 395 to Highway 182 at Bridgeport; north along Highway 182 to the point of beginning.

d. **South Mono Zone:**

That portion of Mono County beginning at the intersection of U.S. Highway 6 and U.S. Highway 395; north along U.S. Highway 6 to the intersection of U.S. Highway 120; west along U.S. Highway 120 to the intersection of the Benton Crossing Road; west along Benton Crossing Road to the intersection of Owens River Road; west along Owens River Road to the intersection of U.S. Highway 395; south along U.S. Highway 395 to the point of beginning.

No open season in the balance of the state not included in the above open zones.

4. Number of Permits:

a. East Lassen Zone: ~~0~~ [0-50] permits
b. Central Lassen Zone: ~~0~~ [0-50] permits
c. North Mono Zone: ~~30~~ [0-100] permits
d. South Mono Zone: ~~0~~ [0-100] permits

5. Permit Process:

The free sage grouse hunting permits shall be issued by random drawing. Applicants must have a valid California hunting license and shall submit only one drawing application for either the East Lassen Zone, Central Lassen Zone, North Mono Zone, or the South Mono Zone. Up to four hunters may apply as a party. Applications must be submitted through the Automated License Data System by August 10. Each application will be issued a computer-generated random number and permits shall be issued by random number (from lowest to highest). Party applications shall receive a single random number and parties shall not be split to meet the number of permits available. Successful applicants will be notified by mail prior to the opening date of the season. Permits are nontransferable.

6. Falconry Only Permits:

Applicants desiring to use a sage grouse permit during the falconry-only season must declare upon the application that the permit is for falconry only.

. . . [No changes to subsections 300(a)(1)(E) through 300(b)]

Note: Authority cited: Sections 200, 202, 203 and 355, Fish and Game Code. Reference: Sections 200, 202, 203, 203.1, 215, 220, 355 and 356, Fish and Game Code.

Section 310.5, Title 14, is amended to read:

§ 310.5 Shooting Hours for Upland Game Birds.

The shooting hours for all upland game birds, except for pheasants and the spring wild turkey season, shall be from one-half hour before sunrise to sunset. The shooting hours for pheasants shall be from 8:00 a.m. to sunset. The shooting hours for the spring wild turkey season shall be from one-half hour before sunrise to 5~~4~~:00 p.m.

Note: Authority cited: Section 3000, Fish and Game Code. Reference : Section 3000, Fish and Game Code.

CENTER *for* BIOLOGICAL DIVERSITY *Because life is good.*

working through science, law and creative media to secure a future for all species, great or small, hovering on the brink of extinction.

VIA ELECTRONIC MAIL

May 28, 2015

Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
fgc@fgc.ca.gov

Re: Item #22; June 11, 2015 agenda; Discussion of proposed changes to upland game bird regulations (Sections 300 and 708.18, Title 14, CCR)

Dear Commissioners,

I am writing on behalf of the Center for Biological Diversity ("Center") regarding Item #22 on the June 11, 2015 agenda listed as "Discussion of proposed changes to upland game bird regulations (Sections 300 and 708.18, Title 14, CCR)." According to the Notice of Proposed Changes in Regulations this matter will not be voted on by the Commission until the August 5, 2015 meeting. The Center intends to submit detailed comments on the proposed changes to the Commission for consideration at the August meeting. However, as an initial matter the Center provides the following comments to help inform the discussion at the June 11, 2015 meeting.

The Center has serious concerns about the Department's proposal to change the upland bird hunting regulations to provide for a range of permits for sage grouse in the 2015-2016 season with limits as high as 50 two-bird permits or 100 one-bird permits in each of the four zones. Given the precarious status of this rare bird, the Commission should not allow any hunting to occur in the 2015-2016 season in order to support conservation.

Although hunting has not been identified as the *primary* reason for the decline of the sage grouse in California, it remains a factor that undermines conservation of this species. As the Department itself admits: "Concerns about the potential effects of hunting on sage grouse through additive mortality have been expressed in the scientific literature, including studies from California." (ISOR at 3.) Moreover, the California populations of the sage grouse in California are generally small and isolated putting them at risk of further decline and extinction from stochastic events as well as increased development within sensitive habitat.

The precautionary principle should inform the Commission's decisions on this matter and a zero permit limit for all sage grouse populations in California should be adopted for the 2015-2016 season. Department's proposal to delay in determining the specific number of permits is needed until after the spring 2015 lek and population estimates and modeling are completed, would remove the specific decision on the permits from the Commission and undermine public

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participation in that process. Moreover, there is no scientific support provided for the Department's proposal to vastly *increase* the upper limit for permits over the permit amounts authorized by the Commission for last season (30 permits authorized in the North Mono zone and no permits authorized in the South Mono, East Lassen or Central Lassen zones) to up to 100 one-bird permits in the North Mono and South Mono zones and up to 50 two-bird permits in East Lassen and Central Lassen zones.

The Commission should not delay engaging directly with this important issue. The Center urges the Commission to reject the Department's proposal to provide a range of permit limits for sage grouse in the 2015-2016 season and, rather, impose a zero limit for the 2015-2016 season in all zones as a key element protecting the California sage grouse populations in the face of multiple threats.

Sincerely,

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STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Section 502
Title 14, California Code of Regulations
Re: Waterfowl, Migratory; American Coot; and
Common Moorhen (Common Gallinule)

I. Date of Initial Statement of Reasons: January 20, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: April 9, 2015
Location: Santa Rosa, CA

(b) Discussion Hearing: Date: June 11, 2015
Location: Mammoth Lakes, CA

(c) Adoption Hearing: Date: August 5, 2015
Location: Fortuna, CA

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The U.S. Fish and Wildlife Service (Service) annually establishes federal regulation "frameworks" in late July after they analyze current waterfowl population data and gather input from the public. These "frameworks" describe the earliest waterfowl hunting seasons can open, the maximum number of days hunting can occur, the latest hunting seasons must close, and the maximum daily bag limit, among other things. States must set waterfowl hunting regulations within the federal frameworks.

States may make recommendations to change federal framework regulations. These recommendations are made to Flyway Councils during March and July. The Councils may elect to forward these recommendations to the Service. The Service may elect to incorporate proposed changes in the "framework" regulations. For most waterfowl hunting season regulations, the Service establishes the "framework" regulations in late July at a public meeting; however the publication of

these decisions in the Federal Register does not occur until September. California has made one proposal to change federal frameworks.

Sections 202, 355 and 356 of the Fish and Game Code authorize the Fish and Game Commission to annually adopt regulations pertaining to the hunting of migratory birds that conform with, or further restrict, the regulations prescribed by the Service pursuant to their authority under the Migratory Bird Treaty Act. The Fish and Game Commission selects and establishes in State regulations the specific hunting season dates and daily bag limits within the federal frameworks.

Current regulations in Section 502, Title 14, California Code of Regulations (CCR), provide definitions, hunting zone descriptions, season opening and closing dates, and daily bag and possession limits. Item 1 provides notice that other framework regulations regarding duck season lengths and bag limits may change in 2015 when current biological information becomes available. Item 2 requires Flyway Council and Service approval to establish the season length for brant pursuant to the process described above.

The specific recommended regulation changes are:

1) Changes in subsection 502(d) provide a range of waterfowl hunting season lengths (which may be split into two segments) between 38 and 107 days (including 2 days for Youth Waterfowl Hunting Days) for all hunting methods. A range of daily bag limits is also given for ducks in all zones. In addition, an increase in the bag limit for geese in the Colorado River Zone is proposed to match waterfowl regulations in neighboring Arizona. Federal regulations require that California's hunting regulations conform to those of Arizona in the Colorado River Zone and with Oregon in the North Coast Special Management Area. See tables in the Informative Digest for season and bag limit ranges.

   The existing waterfowl hunting regulations establish specific season dates and daily bag limits for each zone. This proposal provides ranges for the season dates and daily bag limits. These ranges are necessary as the specific opening and closing dates and daily bag limits cannot be proposed until the California Waterfowl Breeding Population Survey is completed in May and the Service has established federal regulation "frameworks" for the 2015/16 waterfowl hunting season. The Service will establish the frameworks in late July after the analysis of current waterfowl population survey, other data, and input from the Flyway Councils and the public.

2) Changes in subsections 502(d)(6)(B)6. and 502(d)(6)(B)7. propose a range for brant season length in the Northern Brant and Balance of State Brant special management areas.

The existing brant season lengths in the above mentioned special management areas are 30 days. This proposal provides a season length range to a maximum of 45 days. The range is necessary as the increase in season length cannot be formally proposed until the Midwinter Waterfowl Survey is analyzed and the Brant Management Plan is finalized at the July Pacific Flyway meeting. In addition, Flyway Council and Service approval is needed for these proposed changes.

Minor editorial changes are also proposed to clarify and simplify the regulations and to comply with existing federal frameworks.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 202 and 355, Fish and Game Code.
Reference: Sections 202, 355, and 356, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change:

None.

(d) Identification of Reports or Documents Supporting Regulation Change:

2015 Draft Environmental Document Migratory Game Bird Hunting

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

This proposal was discussed at the Fish and Game Commission's Wildlife Resources Committee meeting held on January 14, 2015 in West Sacramento, CA.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No other alternatives were identified.

(b) No Change Alternative:

1) The No Change Alternative would maintain the existing season lengths and dates, and duck and goose daily bag limits in all zones. The California Breeding Pair Survey has not been completed and analyzed and the federal frameworks have not been set. Changes in the existing regulations could result if specific dates and bag limits are proposed before the above items are completed.

2) The No Change Alternative would maintain the existing season length of 30 days for brant in the Northern Brant and Balance of State Brant special management areas.

(c) Consideration of Alternatives: In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

(d) Description of Reasonable Alternatives That Would Lessen Adverse Impact on Small Business: None.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states.
The proposed regulations are intended to provide additional recreational opportunity to the public. The response is expected to be minor in nature.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new business, the elimination of existing businesses or the expansion of businesses in California. The proposed waterfowl regulations will set the 2015-16 waterfowl hunting season dates and bag limits within the federal frameworks. Positive impacts to jobs and/or businesses that provide services to waterfowl hunters will be realized with the proposed regulations for the waterfowl hunting season in 2015-16. This is based on a 2011 US Fish and Wildlife national survey of fishing, hunting, and wildlife associated recreation for California. The report estimated that migratory bird hunters contributed about $169,115,000 to businesses in California during the 2011 migratory bird hunting season. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed regulations is to sustainably manage waterfowl populations, and consequently, the long-term viability of these same small businesses.

The Commission anticipates benefits to the health and welfare of California residents. Hunting provides opportunities for multi-generational family activities and promotes respect for California's environment by the future stewards of the State's resources. The Commission anticipates benefits to the State's environment by the sustainable management of California's waterfowl resources. The Commission does not anticipate any impacts to worker safety because the proposed amendments will not affect working conditions.

(c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

(e) Nondiscretionary Costs/Savings to Local Agencies:

None.

(f) Programs Mandated on Local Agencies or School Districts:

None.

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code:

None.

(h) Effect on Housing Costs:

None.

VII. Economic Impact Assessment

The proposed waterfowl regulations will set the 2015-16 waterfowl hunting season dates and bag limits within the federal frameworks.

(a) Effects of the regulation on the creation or elimination of jobs within the state

Positive impacts to jobs and/or businesses that provide services to waterfowl hunters will be realized with the adoption of the proposed waterfowl hunting regulations for the 2015-16 season. This is based on the 2011 U.S. Fish and Wildlife National Survey of Fishing, Hunting, and Wildlife-Associated Recreation for California (issued Feb. 2013). The report estimates that hunters contributed about $169,115,000 to small businesses in California during the 2011 waterfowl hunting season. The impacted businesses are generally small businesses employing few individuals and, like all small businesses, are subject to failure for a variety of causes. Additionally, the long-term intent of the proposed regulations is to sustainably manage waterfowl populations, and consequently, the long-term viability of these same small businesses. The 2011 report is posted on the US Dept. of Commerce website at http://www.census.gov/prod/2013pubs/fhw11-ca.pdf.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the state

The result of the regulations on the creation of new businesses or the elimination of existing businesses within the state will be neutral. Minor variations in the bag limits as may be established in the regulations are, by themselves, unlikely to stimulate the creation of new businesses or cause the elimination of existing businesses. The number of hunting trips and the economic contributions from them are expected to remain more or less the same.

(c) Effects of the regulation on the expansion of businesses currently doing business within the state

The long-term intent of the proposed regulations is to sustainably manage waterfowl populations, and consequently, the long-term viability of small businesses that serve recreational waterfowl hunters. Minor variations in the bag limits as may be established in the regulations are, by themselves, unlikely to stimulate substantial expansion of these existing businesses.

(d) Benefits of the regulation to the health and welfare of California residents

Hunting is an outdoor activity that can provide several benefits for those who partake in it and for the environment as well. The fees that hunters pay for licenses and stamps are used for conservation. In addition, the efforts of hunters can help to reduce wildlife depredation on private lands. Hunters and their families benefit from fresh game to eat, and from the benefits of outdoor recreation. People who hunt have a special connection with the outdoors and an awareness of the relationships between wildlife, habitat, and humans. With that awareness comes an understanding of the role humans play in being caretakers of the environment. Hunting is a tradition that is often passed on from one generation to the next creating a special bond between family members and friends.

(e) Benefits of the regulation to worker safety

The regulations will not affect worker safety because they will not impact working conditions.

(f) Benefits of the regulation to the state's environment

It is the policy of this state to encourage the conservation, maintenance, and utilization of waterfowl resources for the benefit of all the citizens of the state. The objectives of this policy include, but are not limited to, the maintenance of sufficient populations of waterfowl to ensure their continued existence and the maintenance of a sufficient resource to support recreational opportunity. Adoption of scientifically-based waterfowl seasons, bag and possession limits

provides for the maintenance of sufficient populations of waterfowl to ensure those objectives are met.

(g) Concurrence with other Statutory Requirements:

Not applicable

Informative Digest/Policy Statement Overview

Current regulations in Section 502, Title 14, California Code of Regulations (CCR), provide definitions, hunting zone descriptions, season opening and closing dates, and establish daily bag and possession limits for waterfowl. Item 1 provides notice that other framework regulations regarding duck season lengths and bag limits may change in 2015 when current biological information becomes available. Item 2 requires Flyway Council and Service approval to establish the season length for brant, pursuant to the process described below.

The Service will consider recommendations from the Flyway Council at their meeting in late July 2015. At this time, the California Waterfowl Breeding Population Survey has not been conducted and the Service has not established federal regulation "frameworks" which will occur in August after the analysis of current waterfowl population survey, other data, input from the Flyway Councils and the public.

The Department's proposals are as follows:

1. Provide a range of waterfowl hunting season lengths (which may be split into two segments) between 38 and 107 days (including 2 youth waterfowl hunt days) for all hunting methods. A range of daily bag limits is also given for ducks in all zones. In addition, an increase in the bag limit for geese in the Colorado River Zone is proposed to match waterfowl regulations in neighboring Arizona. Federal regulations require that California's hunting regulations conform to those of Arizona in the Colorado River Zone and with Oregon in the North Coast Special Management Area. See the table below for season and bag limit ranges.

2. Provide a range of brant season lengths in the Northern Brant and Balance of State Brant special management areas to allow for a possible increase in season length.

Minor editorial changes are also proposed to clarify and simplify the regulations and to comply with existing federal frameworks.

<u>Benefits of the regulations</u>

The benefits of the proposed regulations are concurrence with federal law and the sustainable management of the State's waterfowl resources. Positive impacts to jobs and/or businesses that provide services to waterfowl hunters will be realized with the continued adoption of waterfowl hunting seasons in 2015-16.

Non-monetary benefits to the public

The Commission does not anticipate non-monetary benefits to the protection of public health and safety, worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Evaluation of incompatibility with existing regulations

The Commission has reviewed its regulations in Title 14, CCR, and conducted a search of other regulations on this topic and has concluded that the proposed amendments to Section 502 are neither inconsistent nor incompatible with existing State regulations. No other State agency has the authority to promulgate waterfowl hunting regulations.

Summary of Proposed Waterfowl Hunting Regulations			
AREA	**SPECIES**	**SEASONS**	**DAILY BAG & POSSESSION LIMITS**
Statewide	Coots & Moorhens	Concurrent w/duck season	25/day. 75 in possession
Northeastern Zone *Season may be split for Ducks, Pintail, Canvasback ,Scaup, and Dark and White Geese*	Ducks	Between 38 & 105 days	4-7/day, which may include: 3-7 mallards no more than 1-2 females, 0-3 pintail, 0-3 canvasback, 0-3 redheads, 0-7 scaup. Possession limit triple the daily bag.
	Pintail Canvasback Scaup	Between 38 & 105 days	
	Geese	105 days	25/day, which may include: 15 white geese, 10 dark geese no more than 2 Large Canada geese. Possession limit triple the daily bag.
Southern San Joaquin Valley Zone *Season may be split for Ducks, Pintail, Canvasback and Scaup.*	Ducks	Between 38 & 105 days	4-7/day, which may include: 3-7 mallards no more than 1-2 females, 0-3 pintail, 0-3 canvasback, 0- 3 redheads, 0-7 scaup. Possession limit triple the daily bag.
	Pintail Canvasback Scaup	Between 0 & 105 days	
	Geese	100 days	25/ day, which may include: 15 white geese, 10 dark geese. Possession limit triple the daily bag.
Southern California Zone *Season may be split for Ducks, Pintail, Canvasback and Scaup.*	Ducks	Between 38 &100 days	4-7/day, which may include: 3-7 mallards no more than 1-2 hen mallards, 0-3 pintail, 0-3 canvasback, 0-3 redheads, 0-7 scaup. Possession limit triple the daily bag.
	Pintail Canvasback Scaup	Between 0 &100 days	
	Geese	100 days	18/day, which may include: 15 white geese, 3 dark geese. Possession limit triple the daily bag.
Colorado River Zone *Season may be split for Ducks, Pintail, Canvasback and Scaup.*	Ducks	Between 38 & 101 days	4-7/day, which may include: 3-7 mallards no more than 1-2 females or Mexican-like ducks, 0-3 pintail, 0-3 canvasback, 0-3 redheads, 0-7 scaup. Possession limit triple the daily bag.
	Pintail Canvasback Scaup	Between 0 & 101 days	
	Geese	101 days	14/day, up to 10 white geese, up to 4 dark geese. Possession limit triple the daily bag.
Balance of State Zone *Season may be split for Ducks, Pintail, Canvasback, Scaup and Dark and White Geese.*	Ducks	Between 38 & 100 days	4-7/day, which may include: 3-7 mallards no more than 1-2 females, 0-3 pintail, 0-3 canvasback, 0-3 redheads, 0-7 scaup. Possession limit triple the daily bag.
	Pintail Canvasback Scaup	Between 0 & 100 days	
	Geese	Early Season: 5 days (CAGO only)Regular Season: 100 days Late Season: 5 days (Whitefronts and white geese)	25/day, which may include: 15 white geese, 10 dark geese. Possession limit triple the daily bag.

Summary of Proposed Waterfowl Hunting Regulations, Continued

SPECIAL MANAGEMENT AREAS	SPECIES	SEASON	DAILY BAG & POSSESSION LIMITS
North Coast *Season may be split*	All Canada Geese	105 days except for Large Canada geese which cannot exceed 100 days or extend beyond the last Sunday in January.	10/day, only 1 may be a Large Canada goose. Possession limit triple the daily bag. Large Canada geese are closed during the Late Season.
Humboldt Bay South Spit (West Side)	All species	Closed during brant season	
Sacramento Valley	White-fronted geese	Open concurrently with general goose season through Dec 21	3/day. Possession limit triple the daily bag.
Morro Bay	All species	Open in designated areas only	Waterfowl season opens concurrently with brant season.
Martis Creek Lake	All species	Closed until Nov 16	
Northern Brant	Black Brant	Between 30 and 45 days	2/day. Possession limit triple the daily bag.
Balance of State Brant	Black Brant	Between 30 and 45 days	2/day. Possession limit triple the daily bag.
Imperial County *Season may be split*	White Geese	102 days	15/day. Possession limit triple the daily bag.
YOUTH WATERFOWL HUNTING DAYS	**SPECIES**	**SEASON**	**DAILY BAG & POSSESSION LIMITS**
Northeastern Zone	Same as regular season	The Saturday fourteen days before the opening of waterfowl season extending for 2 days.	Same as regular season
Southern San Joaquin Valley Zone		The Saturday following the closing of waterfowl season extending for 2 days.	
Southern California Zone		The Saturday following the closing of waterfowl season extending for 2 days.	
Colorado River Zone		The Saturday following the closing for waterfowl season extending for 2 days.	
Balance of State Zone		The Saturday following the closing of waterfowl season extending for 2 days.	
FALCONRY OF DUCKS	**SPECIES**	**SEASON**	**DAILY BAG & POSSESSION LIMITS**
Northeastern Zone	Same as regular season	Between 38 and 105 days	3/ day, possession limit 9
Balance of State Zone		Between 38 and 107 days	
Southern San Joaquin Valley Zone		Between 38 and 107 days	
Southern California Zone		Between 38 and 107 days	
Colorado River Zone	Ducks only	Between 38 and 107 days	

REGULATORY TEXT

Section 502, Title 14, CCR, is amended as follows:

§502. Waterfowl, Migratory; American Coot and Common Moorhen (Common Gallinule).

. . . [No changes to 502(a) through (c)]

(d) Seasons and Bag and Possession Limits for Ducks and Geese by Zone.		
(1) Northeastern California Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	~~From the first Saturday in October extending for 105 days.~~ ~~Scaup: from the first Saturday in October extending for a period of 58 days and from the third Saturday in December extending for a period of 28 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season may be split into two segments and will be between 38 and 105 days except for some species that may have a shorter season than the general duck season.	Daily bag limit: ~~7~~ [4-7] Daily bag limit may include: • ~~7~~ [3-7] mallards, but not more than ~~2~~ [1-2] females. • ~~2~~ [0-3] pintail (either sex). • ~~1~~ [0-3] canvasback (either sex). • ~~2~~ [0-3] redheads (either sex). • ~~3~~ [0-7] scaup (either sex). Possession limit: triple the daily bag limit.
Geese	~~Regular Season:~~ ~~Dark geese from the first Saturday in October extending for 100 days. White geese from the last Friday in October extending for 73 days.~~ ~~Late Season: White-fronted geese from the first Friday in March extending for 5 days. White geese from the first Saturday in February extending for 32 days.~~ [Opening no earlier than the Saturday closest to October 1	Daily bag limit: 25 Daily bag limit may include: • 15 white geese. • 10 dark geese but not more than 2 Large Canada geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.

	and closing no later than the last Sunday in January. Season may be split into two segments and will be 105 days.] During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016, Fish and Game Code.	
(2) Southern San Joaquin Valley Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	~~From the third Saturday in October extending for 100 days.~~ ~~Scaup: from the first Saturday in November extending for 86 days~~. [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season may be split into two segments and will be between 38 and 105 days except for some species that may have a shorter season than the general duck season.]	Daily bag limit: ~~7~~ [4-7] Daily bag limit may include: • ~~7~~ [3-7] mallards, but not more than ~~2~~ [1-2] females. • ~~2~~ [0-3] pintail (either sex). • ~~1~~ [0-3] canvasback (either sex). • ~~2~~ [0-3] redheads (either sex). • ~~3~~ [0-7] scaup (either sex). Possession limit: triple the daily bag limit.
Geese	~~From the third Saturday in October extending for 100 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season will be 100 days.]	Daily bag limit: 25 Daily bag limit may include: • 15 white geese. • 10 dark geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(3) Southern California Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	~~From the third Saturday in October extending for 100 days.~~	Daily bag limit: ~~7~~ [4-7] Daily bag limit may include: • ~~7~~ [3-7] mallards, but not more

	~~Scaup: from the first Saturday in November extending for 86 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season may be split into two segments and will be between 38 and 100days except for some species that may have a shorter season than the general duck season.]	than ~~2~~ [1-2] females. • ~~2~~ [0-3] pintail (either sex). • ~~1~~ [0-3] canvasback (either sex). • ~~2~~ [0-3] redheads (either sex). • ~~3~~ [0-7] scaup (either sex). Possession limit: triple the daily bag limit.
Geese	~~From the third Saturday in October extending for 100 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season will be 100 days.]	Daily bag limit: 18 Daily bag limit may include: • 15 white geese. • 3 dark geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(4) Colorado River Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers).	~~From the third Friday in October extending for 101 days.~~ ~~Scaup: from the first Saturday in November extending for 86 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. (Season may be split into two segments and will be between 38 and 101 days except for some species that may have a shorter season than the general duck season.]	Daily bag limit: ~~7~~ [4-7] Daily bag limit may include: • 7 mallards, but not more than ~~2~~ [1-2] females or Mexican-like ducks. • ~~2~~ [0-3] pintail (either sex). • ~~1~~ [0-3] canvasback (either sex). • ~~2~~ [0-3] redheads (either sex). • ~~3~~ [0-7] scaup (either sex). Possession limit: triple the daily bag limit.
Geese	~~From the third Friday in October extending for 101 days.~~	Daily bag limit: ~~10~~ 14 Daily bag limit may include: • 10 white geese.

	[Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season will be 101 days.]	• ~~3~~ 4 dark geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(5) Balance of State Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers).	~~From the third Saturday in October extending for 100 days.~~ ~~Scaup: from the first Saturday in November extending for 86 days.~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season may be split into two segments and will be between 38 and 100 days except for some species that may have a shorter season than the general duck season.]	Daily bag limit: ~~7~~ [4-7] Daily bag limit may include: • ~~7~~ [3-7] mallards, but not more than ~~2~~ [1-2] females. • ~~2~~ [0-3] pintail (either sex). • ~~1~~ [0-3] canvasback (either sex). • ~~2~~ [0-3] redheads (either sex). • ~~3~~ [0-7] scaup (either sex). Possession limit: triple the daily bag limit.
Geese	Early Season: Large Canada geese only from the Saturday closest to October 1 for a period of 5 days EXCEPT in the North Coast Special Management Area where Large Canada geese are closed during the early season. Regular Season: Dark and white geese ~~from the third Saturday in October extending for 100 days~~ [Opening no earlier than the Saturday closest to October 1 and closing no later than the last Sunday in January. Season will be 100 days] EXCEPT in the Sacramento Valley Special Management Area where the white-fronted goose season will close after December 21.	Daily bag limit: 25 Daily bag limit may include: • 15 white geese. • 10 dark geese EXCEPT in the Sacramento Valley Special Management Area where only 3 may be white-fronted geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.

	Late Season: White-fronted geese and white geese from the second Saturday in February extending for a period of 5 days EXCEPT in the Sacramento Valley Special Management Area where the white-fronted goose season is closed. During the Late Season, hunting is not permitted on wildlife areas listed in Sections 550-552 EXCEPT on Type C wildlife areas in the North Central and Central regions.		

(6) Special Management Areas (see descriptions in 502(b)(6))				
	(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*	
1. North Coast	All Canada Geese	From the ~~last Friday~~ first Saturday in ~~October~~ November extending for a period of ~~87~~ 86 days (Regular Season) and from the third ~~Saturday~~ Sunday in February extending for a period of ~~18~~ 19 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions Section 2016, Fish and Game Code.	Daily bag limit: 10 Canada Geese of which only 1 may be a Large Canada goose (see definitions: 502(a)), EXCEPT during the Late Season the bag limit on Large Canada geese is zero. Possession limit: triple the daily bag limit.	
2. Humboldt Bay South Spit (West Side)	All Species	Closed during brant Season		
3. Sacramento Valley	White-Fronted Geese	Open concurrently with the goose season through December 21, and during Youth Waterfowl Hunting Days.	Daily bag limit: 3 white-fronted geese. Possession limit: triple the daily bag limit.	
4. Morro Bay	All species	Open in designated area only from the opening day of brant season through the remainder of waterfowl season.		

5. Martis Creek Lake	All species	Closed until November 16.		
6. Northern Brant	Black Brant	~~From November 7 extending for 30 days.~~ Between 30 and 45 days.	Daily bag limit: 2 Possession limit: triple the daily bag limit.	
7. Balance of State Brant	Black Brant	~~From the second Saturday in November extending for 30 days~~. Between 30 and 45 days.	Daily bag limit: 2 Possession limit: triple the daily bag limit.	
8. Imperial County	White Geese	From the first Saturday in November extending for a period of 86 days (Regular Season) and from the first Saturday in February extending for a period of 16 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016, Fish and Game Code.	Daily bag limit: 15 Possession limit: triple the daily bag limit.	

(e) Youth Waterfowl Hunting Days Regulations (NOTE: To participate in these Youth Waterfowl Hunts, federal regulations require that hunters must be 15 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.)

(1) Statewide Provisions.

(A) Species	*(B) Season*	*(C) Daily Bag Limit*
Ducks (including Mergansers), American Coot, Common Moorhen, Black Brant, Geese	1. Northeastern California Zone: The Saturday fourteen days before the opening of waterfowl season extending for 2 days. 2. Southern San Joaquin Valley Zone: The Saturday following the closing of waterfowl season extending for 2 days. 3. Southern California Zone: The Saturday following the closing of waterfowl season extending for 2 days. 4. Colorado River Zone: The Saturday	Same as regular season.

	following the closing of waterfowl season extending for 2 days. 5. Balance of State Zone: The Saturday following the closing of waterfowl season extending for 2 days.	

(f) Falconry Take of Ducks (including Mergansers), Geese, American Coots, and Common Moorhens.

(1) Statewide Provisions

(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers), Geese, American Coot and Common Moorhen	1. Northeastern California Zone. Open concurrently with duck season. 2. Balance of State Zone. Open concurrently with duck season and ~~January 31-February 1, 2015,~~ [February 1 – 2, 2016] [or] [extending 38-107 days] EXCEPT in the North Coast Special Management Area where the falconry season for geese runs concurrently with the season for Small Canada geese (see 502(d)(6)) 3. Southern San Joaquin Valley Zone. Open concurrently with duck season and ~~January 31-February 1, 2015~~ [February 1-3, 2016] [or] [extending 38-107 days]. Goose hunting in this zone by means of falconry is not permitted. 4. Southern California Zone. Open concurrently with duck season and ~~January 26-30, 2015~~ February 1-5, 2016 EXCEPT in the Imperial County Special Management Area where the falconry season for geese runs concurrently with the season for white geese.	Daily bag limit: 3 Daily bag limit makeup: • Either all of 1 species or a mixture of species allowed for take. Possession limit: 9

	5. Colorado River Zone. Open concurrently with duck season and ~~January 26-29, 2015~~ February 1-4, 2016. Goose hunting in this zone by means of falconry is not permitted. Federal regulations require that California's hunting regulations conform to those of Arizona, where goose hunting by means of falconry is not permitted	

Note: Authority cited: Sections 202 and 355, Fish and Game Code. Reference: Sections 202, 355 and 356, Fish and Game Code.

CALIFORNIA FARM BUREAU FEDERATION
GOVERNMENTAL AFFAIRS DIVISION
1127-11TH STREET, SUITE 626, SACRAMENTO, CA 95814 · PHONE (916) 446-4647

May 28, 2015

Mr. Jack Baylis, President
Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Item 23: Discussion of proposed changes to waterfowl regulations: North East Zone Late Season Goose Hunt

Dear Mr. Baylis:

The California Farm Bureau Federation (Farm Bureau) is writing to express support for continuation of the existing season of the North East Zone Goose Hunt. Farm Bureau represents more than 57,000 members as it strives to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of California's resources. Farmers and ranchers in the North East Zone have provided significant forage to migrating geese. The late season hunt has proven very beneficial in reducing crop and pasture losses and Farm Bureau recommends keeping the late season hunt intact.

Geese consume significant amounts of forage. It is estimated that a goose consumes about four pounds of forage a day[1]. That translates to a flock of 1,000 geese consuming the equivalent of 167 cows. A graduate student at Humboldt State University estimated that the value of forage lost to Aleutian Cackling Geese in Humboldt County was $42.90/acre[2]. One farmer in Lassen County lost over $15,000 to damage from migrating geese prior to implementation of the late season hunt.

The hunt has proven to be extremely effective at preventing crop and pasture damage from migrating geese in the North East Zone. It has also helped to protect forage for waterfowl arriving the following fall. Farmers and ranchers in the area are extremely appreciative of the Department of Fish and Wildlife (DFW) and the Fish and Game Commission for adopting the late season hunt and want to ensure that it continues.

Farm Bureau supports the current late season hunt for white geese in the North East Zone, which currently provides for 32 days of hunting on private lands beginning on the first Saturday in February. Farm Bureau met with DFW and the California Waterfowl Association (CWA) to discuss the possibility of changes to address concerns of CWA over loss of public land hunting

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[1] Canada Geese Facts and Management Options, New Hampshire Department of Environmental Services. Available online: http://des.nh.gov/organization/commissioner/pip/factsheets/bb/documents/bb-53.pdf

[2] Tjarnstrom, Frances Ruth. May 2014. Determining the Impacts of Forage Consumption by Aleutian Cackling Geese on Livestock Production from North Coastal Pasture Lands in Humboldt County, California. Available online: http://humboldt-dspace.calstate.edu/bitstream/handle/2148/1915/Tjarnstrom_Frances_R_Sp2014.pdf?sequence=1

opportunities earlier in the season. Farm Bureau believes the current season timing and length provides hunting opportunities when the geese are most likely to be present and provides tools to private landowners to prevent crop and pasture losses. However, Farm Bureau is open to the idea of allowing hunting on Type C Wildlife Areas during the late season.

The ultimate goal of the late season hunt is to ensure that forage is available for the following season's migrating waterfowl and prevent crop and pasture losses. Farm Bureau requests that the length of the late season not be changed, as the current late season hunt appears to meeting its goal. Farm Bureau appreciates the Commission's consideration of its request and urges the late season length remain.

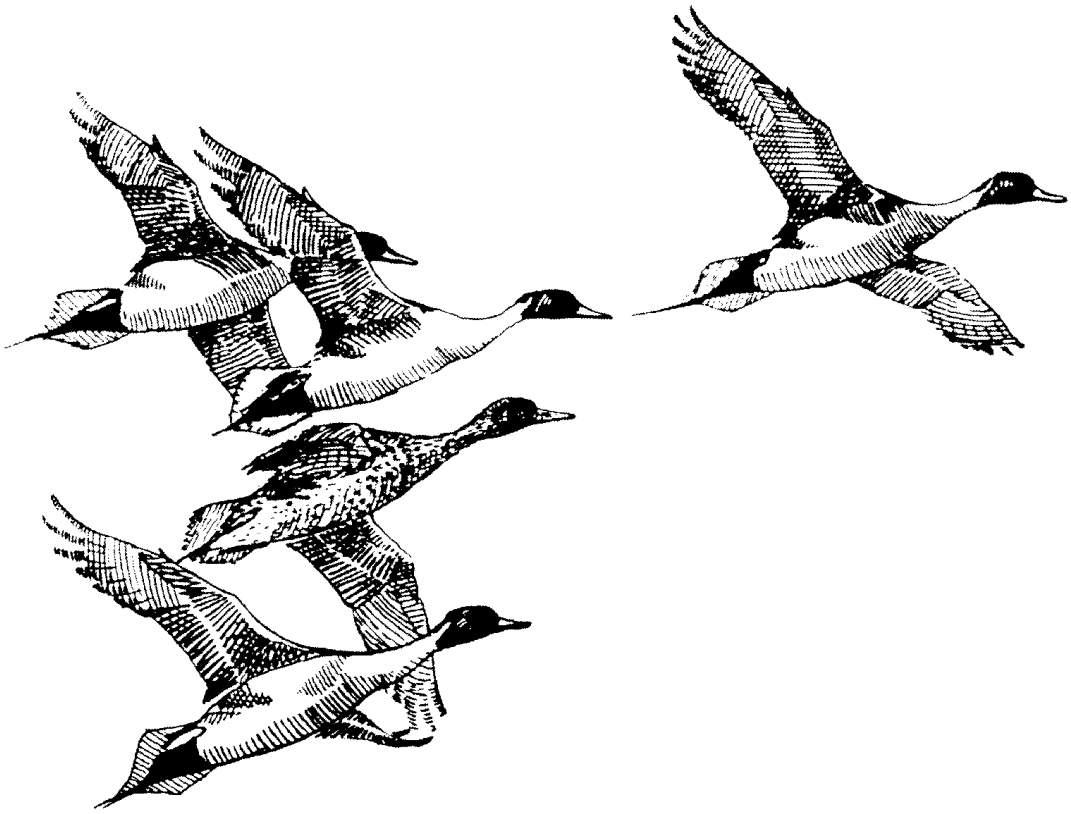
Sincerely,

Noelle G. Cremers
Director, Natural Resources and Commodities

CC: Members, Fish and Game Commission
Mr. Sonke Mastrup, Executive Director, Fish and Game Commission
Mr. Charlton H. Bonham, Director, Department of Fish and Wildlife
Mr. Dan Yparraguirre, Deputy Director, Department of Fish and Wildlife

DRAFT
ENVIRONMENTAL DOCUMENT
Section 502, Title 14
California Code of Regulations

MIGRATORY GAME BIRD HUNTING
(WATERFOWL, COOTS, MOORHENS)



May 11, 2015

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND WILDLIFE

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CHAPTER 1 - SUMMARY

PROPOSED PROJECT AND ALTERNATIVES

The project discussed in this document (the proposed project) involves modifications to the current waterfowl hunting regulations for the 2015-16 waterfowl hunting season. Specifically, the Department is proposing to:

- Provide a range of waterfowl hunting season lengths (which may be split into two segments) between 38 and 107 days (including 2 youth waterfowl hunt days) for all hunting methods. A range of daily bag limits is also given for ducks in all zones. In addition, an increase in the bag limit for geese in the Colorado River Zone is proposed to match waterfowl regulations in neighboring Arizona. Federal regulations require that California's hunting regulations conform to those of Arizona in the Colorado River Zone and with Oregon in the North Coast Special Management Area. See the table below for season and bag limit ranges.

- Provide a range of brant season lengths in the Northern Brant and Balance of State Brant special management areas to allow for a possible increase in season length.

The U.S. Fish and Wildlife Service (Service) will establish the frameworks in late July after it analyzes current waterfowl population data and considers input from the Flyway Councils and the public. The Federal frameworks specify the outside dates, total number of hunting days, bag limits, shooting hours, and methods of take authorized for migratory game birds. The Department of Fish and Wildlife (Department) will recommend specific season dates and bag limits to the Fish and Game Commission (Commission) after those frameworks are established.

The Commission may not select more liberal season dates or bag limits than those set by the Federal frameworks. Therefore, the decisions of the Commission and the recommendations of the Department to the Commission center on the question of whether to adopt the proposed changes or to consider more restrictive or protective State regulations to keep migratory game bird populations in California in a healthy and productive condition.

The Department is providing the Commission with a range of alternatives to the proposed project. Table 1 summarizes the Department findings that there are no

significant long-term adverse impacts associated with the proposed project or any of the project alternatives considered for the 2015-16 waterfowl hunting regulations.

SUMMARY OF IMPACTS AND MITIGATION

Table 1. Summary of Alternatives and Their Impacts

Alternative	Description	Significant Impact	Mitigation
Proposed Project	Provide a range of waterfowl hunting season lengths (which may be split into two segments) between 38 and 107 days (including 2 youth waterfowl hunt days) for all hunting methods. A range of daily bag limits is also given for ducks in all zones. In addition, an increase in the bag limit for geese in the Colorado River Zone is proposed to match waterfowl regulations in neighboring Arizona. Federal regulations require that California's hunting regulations conform to those of Arizona in the Colorado River Zone and with Oregon in the North Coast Special Management Area. Provide a range of brant season lengths in the Northern Brant and Balance of State Brant special management areas to allow for a possible increase in season length.	No	N/A
Alternative 1. No Project	No change from the 2014-15 hunting regulations.	No	N/A
Alternative 2. Reduced Season Lengths, Timing and Bag Limits	Reduce season lengths, timing, and/or bag limits by up to 50 percent.	No	N/A
Alternative 3. Elimination of All Mechanical Decoys.	Eliminate mechanical decoys as a method of take.	No	N/A

The Department concludes that the regulated harvest of migratory game birds within the Federal guidelines does not result in a significant adverse impact to their populations as analyzed in the 2006 Final Environmental Document for Migratory Game Bird Hunting of Waterfowl, Coots, and Moorhens (incorporated by reference, State Clearinghouse Number 2006042115, available at 1812 9th Street, Sacramento 95811). This is because the size of a wildlife population at any point in time is the result of the interaction between population (reproductive success and mortality rates) and its environment (habitat). Declines in habitat quality and quantity result in reduced carrying capacity, which results in corresponding declines in populations.

State and Federal roles in establishing waterfowl hunting regulations

Migratory birds are managed under the provisions of the Migratory Bird Treaty Act of July 3, 1918 (40. Stat. 755:16 U.S.C. 703 et seq.), Federal regulations [50 CFR 20 (K)(L)], as well as California statutes (Fish and Game Code sections 355 and 356) and regulations selected by the Commission.

The regulations governing the take of migratory game birds in California are selected by the Commission and forwarded to the Service each year. The regulations selected by the Commission must be within frameworks established by the Service through the following generalized three-step process:

1. The Service, with assistance from the states, assesses the status of migratory game bird populations.

2. The Service establishes regulatory frameworks;

3. The Commission makes and forwards season selections to the Service regarding regulations for California; and

4. The Service and the State adopt the final regulations.

The Federal frameworks specify the outside dates, total number of hunting days, bag limits, shooting hours, and methods of take authorized for migratory game birds. Proposals selected by the Commission cannot be more liberal than the frameworks established by the Service (Fish and Game Code, Section 355).

In selecting hunting regulations, the Commission is governed by the State's Conservation of Wildlife Resources Policy (Fish and Game Code, Section 1801). This policy contains, among other things, objectives to maintain sufficient populations of wildlife resources in the State and to provide public hunting opportunities through

regulated harvest where such harvest is consistent with maintaining healthy wildlife populations (Section 1801 California Fish and Game Code).

In April the Service provided notice to establish hunting regulations for the 2015-16 hunting season; see Federal Register 80 FR 19851-19863. The notice also solicits public comments and establishes the annual schedule for meetings.

The Department is recommending 2 changes to the existing hunting regulations, one of which requires a change in the existing federal frameworks. The change must be approved by both the Pacific Flyway Council at its meeting on July 24, 2015, and the Service at the July 29-30, 2015, Service Regulations Committee (SRC) meeting. The Department's proposals for the 2015-2016 hunting season for waterfowl, coots, and moorhens are based on the most current Federal frameworks, which were established for 2014-15.

<u>The 2014-15 Federal Frameworks Pertaining to California (78 FR 58197- 58227)</u>

Ducks, Mergansers, Coots, Common Moorhens, and Purple Gallinules
Hunting Seasons and Duck Limits: Concurrent 107 days. The daily bag limit is 7 ducks and mergansers, including no more than 2 female mallards, 2 pintail, 3 scaup (86-day season), 1 canvasback, and 2 redheads. The season on coots and common moorhens may be between the outside dates for the season on ducks, but not to exceed 107 days. Coot, Common Moorhen, and Purple Gallinule Limits: The daily bag limits of coots, common moorhens, and purple gallinules are 25, singly or in the aggregate. Possession limits for all species are triple the daily bag limit.

Outside Dates: Between the Saturday nearest September 24 (September 27) and the last Sunday in January (January 25).

Zoning and Split Seasons: Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming may select hunting seasons by zones. Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, and Wyoming may split their seasons into two segments. Colorado, Montana, and New Mexico may split their seasons into two segments.

Colorado River Zone, California: Seasons and limits shall be the same as seasons and limits selected in the adjacent portion of Arizona (South Zone).

Geese
Season Lengths, Outside Dates, and Limits

Canada geese and brant: Except as subsequently noted, 107-day seasons may be selected with outside dates between the Saturday nearest September 24 (September

27) and the last Sunday in January (January 25). In California, the daily bag limit is 10 Canada geese. For brant, California may select a 30-day season. Days must be consecutive. California may select hunting seasons for up to two zones. The daily bag limit is 2 brant and is in addition to other goose limits. In California, the brant season must end no later than December 15.

White-fronted geese: Except as subsequently noted, 107-day seasons may be selected with outside dates between the Saturday nearest September 24 (September 27) and March 10. The daily bag limit is 10.

Light geese: Except as subsequently noted, 107-day seasons may be selected with outside dates between the Saturday nearest September 24 (September 27) and March 10. The basic daily bag limit is 20.

Split Seasons: Unless otherwise specified, seasons for geese may be split into up to 3 segments. Three-way split seasons for Canada geese and white-fronted geese require Pacific Flyway Council and U.S. Fish and Wildlife Service approval and a 3-year evaluation by each participating State.

Balance-of-State Zone (includes Southern San Joaquin Valley zone): A Canada goose season may be selected with outside dates between the Saturday nearest September 24 (September 27) and March 10. In the Sacramento Valley Special Management Area, the season on white-fronted geese must end on or before December 28, and the daily bag limit is 3 white-fronted geese. In the North Coast Special Management Area, hunting days that occur after the last Sunday in January should be concurrent with Oregon's South Coast Zone.

Shooting Hours – From One-half hour before sunrise to sunset.

AREAS OF CONTROVERSY

A public scoping session regarding the preparation of environmental documents for hunting waterfowl was held on February 3, 2015, at the Wildlife Branch office located at 1812 9th Street, Sacramento. No areas of controversy regarding migratory bird hunting were identified at the meeting. However, members of the public have expressed concern regarding the following: 1) mechanical spinning wing decoys in the use of taking waterfowl during past hunting seasons. Specifically, since 2002 about 100 letters and or public testimony has been received by the Fish and Game Commission to ban mechanically spinning wing decoys while only about 12 letters of support or public testimony in favor of mechanically spinning wing decoys during the same time period (Department files); 2) the Commission has received numerous letters both supporting and opposing the continued hunting in Morro and Tomales bays; and 3)

opposition to the continued restrictions on bag limit and season length for white-fronted geese in the Sacramento Valley Special Management Area.

Concerns about the effect of climate change since the 2006 Final Environmental Document for Migratory Game Bird Hunting of Waterfowl, Coots, and Moorhens (incorporated by reference, State Clearinghouse Number 2006042115, available at 1812 9th Street, Sacramento 95811) was published led to a discussion of this topic in Appendix F.

ISSUES TO BE RESOLVED

As provided by existing law, the Commission is the decision-making body (lead agency) considering the proposed project, while the Department has responsibility for conducting management activities such as resource assessments, preparing management plans, operating public hunting opportunities and enforcing laws and regulations. The primary issue for the Commission to resolve is whether to change waterfowl hunting regulations, within the federal framework, as an element of waterfowl management. If such changes are authorized, the Commission will specify the areas, season lengths, and bag and possession limits and other appropriate special conditions.

FUNCTIONAL EQUIVALANCY

The California Environmental Quality Act (CEQA) requires all public agencies in the State to evaluate the environmental impacts of projects they approve, including regulations, which may have a potential to significantly affect the environment. CEQA review of the proposed project will be conducted in accordance with the Commission's certified regulatory program (CRP) approved by the Secretary for the California Resources Agency pursuant to Public Resources Code section 21080.5 (See generally Cal. Code Regs., tit. 14, §§ 781.5, and 15251, subd. (b).). The Department has prepared this Environmental Document (ED) which is the functional equivalent of an Environmental Impact Report, on behalf of the Commission in compliance with this requirement. The ED provides the Commission, other agencies, and the general public with an objective assessment of the potential effects.

In addition, pursuant to Section 15087 of the CEQA Guidelines, this environmental document is available for public review for 45 days. During the review period, the public is encouraged to provide written comments regarding the environmental document to the Department of Fish and Wildlife, Wildlife Branch, 1812 9th Street, Sacramento, California 95811. Comments must be received by the Department by 5:00 p.m. on June 26, 2015.

CHAPTER 2 - THE PROPOSED ACTION

The proposed project being considered consists of the following modifications to existing migratory game bird hunting regulations:

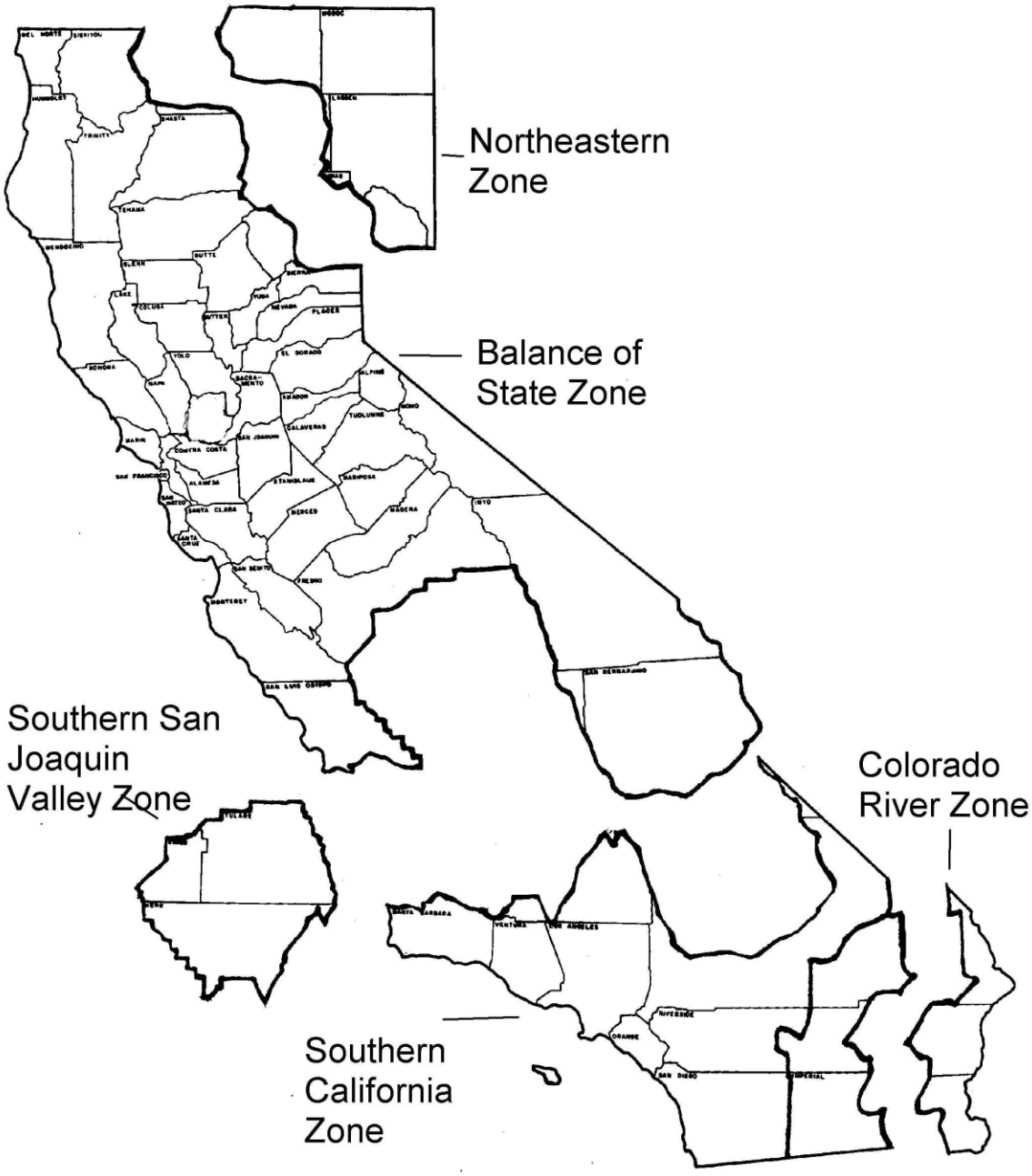
1. Provide a range of waterfowl hunting season lengths (which may be split into two segments) between 38 and 107 days (including 2 youth waterfowl hunt days) for all hunting methods. A range of daily bag limits is also given for ducks in all zones. In addition, an increase in the bag limit for geese in the Colorado River Zone is proposed to match waterfowl regulations in neighboring Arizona. Federal regulations require that California's hunting regulations conform to those of Arizona in the Colorado River Zone and with Oregon in the North Coast Special Management Area.

2. Provide a range of brant season lengths in the Northern Brant and Balance of State Brant special management areas to allow for a possible increase in season length.

Table 2. Proposed Changes to Season Dates and Bag Limits for 2015 - 2016.

Species by Zone	Daily Bag Limit	Possession limit	Season Length
COOTS AND MOORHENS			
Northeastern CA	no change	no change	38-105 straight or split
So. San Joaquin Valley	no change	no change	38-105 straight or split
So. California	no change	no change	38-105 straight or split
Colorado River	no change	no change	no change
Balance of State	no change	no change	38-105 straight or split
DUCKS			
Statewide	4-7	no change	
EXCEPTIONS			
Mallard (max.)	3-7	no change	38-105 straight or split
Mallard Hen (max.)	1-2	no change	38-105 straight or split
Pintail (max.)	0-3	no change	0-105 straight or split
Redhead (max.)	0-3	no change	38-105 straight or split
Scaup (max.)	0-7	no change	0-105 straight or split
Canvasbacks (max.)	0-3	no change	0-105 straight or split
Northeastern Calif.			38-105 straight or split
So. San Joaquin Valley			38-105 straight or split
Southern California			38-105 straight or split
Colorado River			no change
Balance of State			38-100 straight or split
GEESE			
Northeastern Calif.	No change	no change	no change
EXCEPTIONS			
Large Canada Geese (max.)	no change	no change	
White-Front (max.)	no change	no change	105 straight or split
Small Canada Geese (max.)	no change	no change	
White Geese (max.)	no change	no change	105 straight or split
So. San Joaquin Valley	no change	no change	no change
EXCEPTIONS			
Large Canada Geese (max.)	no change	no change	
White-Front (max.)	no change	no change	
Small Canada Geese (max)	no change	no change	
White Geese (max.)	no change	no change	
Southern Calif.	no change	no change	no change
EXCEPTIONS			
Large Canada Goose (max.)	no change	no change	
White-Front Geese (max.)	no change	no change	
Small Canada Geese (max)	no change	no change	
White Geese (max.)	no change	no change	
Colorado River	no change	no change	no change
EXCEPTIONS			
White Geese (max.)	no change	no change	
Dark Geese (max.)	no change	no change	
Balance of State	no change	no change	no change
EXCEPTIONS			
Large Canada Geese (max.)	no change	no change	
White-Front (max.)	no change	no change	
Small Canada Geese (max)	no change	no change	
White Geese (max.)	no change	no change	
Special Management Areas	**Species**		**Season**
North Coast	no change		no change
Humboldt Bay South Spit	no change		no change
Sacramento Valley (West)	no change		no change
Morro Bay	no change		no change
Martis Lake	no change		no change
North Coast Brant	no change		30-37
Balance of State Brant	no change		30-37
Imperial County	no change		no change

Figure 1. Waterfowl Zones in California



BACKGROUND AND EXISTING CONDITIONS

Background

Waterfowl, coots and moorhens are migratory game birds that use varied habitat types in different geographical areas of North America. Many individuals of these species reproduce in other states and countries and migrate in the fall and winter to California, although there are substantial resident populations of some species.

There are 36 species of migratory game birds from two of the taxonomic families that occur in California, listed below. Migratory game birds are defined by convention and law as belonging to the following taxonomic families (USDI 1988a:1):

Anatidae (ducks, geese, brant, and swans);
Columbidae (doves and pigeons);
Gruidae (cranes);
Rallidae (rails, coots, and gallinules);
Scolopacidae (woodcock and snipe);
Corvidae (crows).

The two families discussed in this ED are *Anatidae* and *Rallidae*. These families are combined herein due to similarities in basic life-history characteristics. These characteristics include: (1) the use of California as a migration and wintering area (Palmer 1976, Bellrose 1980, Zeiner *et al*. 1990); (2) the use of seasonal wetlands as roosting and foraging habitats (Bellrose 1980, Heitmeyer and Raveling 1988, USDI 1988a:31-56); and (3) for most duck species, similarities in nesting areas, habitat types, age at reproduction, and clutch sizes (Palmer 1976, Bellrose 1980, USDI 1988). Some differences among the species in these families exist. Geese and some duck species breed at an older age than do most ducks (Palmer 1976, Bellrose 1980). Deepwater and estuarine habitats are more important to some species (Palmer 1976, Bellrose 1980), and the use of dry and wet agricultural fields are more important to other species (Bellrose 1980, Zeiner *et al*. 1990).

Individuals and populations of migratory birds spend parts of the year in different geographical areas. Due to this geographic distribution and migratory nature, management for these species is based on geographic units, or flyways, (USDI 1975, USDI 1988a:63) comprised of several states (Figure 2).

These units, or flyways, incorporate populations that are generally discrete from populations in other units. Therefore, an analysis of the environmental effects of

Figure 2. Administrative Waterfowl Flyways

the proposed project in California must consider the status of the affected species at a flyway level.

Adaptive Harvest Management

In March 1995 (60 FR 15642 -15648), the Service implemented a general harvest strategy for setting duck framework regulations and the process will be used again in 2015 (80 FR 19851-19863). The regulatory process for migratory birds has evolved since the early 1900s from one that included little or no monitoring of populations and the establishment of regulations based on traditions, to today's more data-driven process (Johnson *et al*. 1993). The current process, known as Adaptive Harvest Management (AHM)(USFWS 2014a) establishes explicit harvest objectives and a single regulatory package is selected from a limited array of options. This single package is evaluated based on mathematical models, with the goal of ensuring that duck populations are healthy over the long-term while providing hunting opportunity consistent with the long-term health while learning more about the effect of hunting mortality on population parameters (See Final Environmental Document for Migratory Game Bird Hunting August 2006, incorporated by reference, State Clearinghouse Number 2006042115, available at 1812 9th Street, Sacramento 95811)

AHM balances hunting opportunities with the desire to achieve the duck population goals identified in the North American Waterfowl Management Plan (NAWMP). Currently, a set of four regulatory options, each containing flyway-specific season lengths, bag limits, and dates are being used. The selection of a specific option is recommended each year from a decision matrix based on mid-continent mallard breeding populations and habitat conditions in the current year, although the State continues to have the option to establish more restrictive regulations.

For the Pacific Flyway, the proposed regulatory packages vary primarily in season length (closed, 60, 86, or 107 days) and total duck bag limit (either four or seven ducks per day). Species- (e.g. mallard) and sex- (e.g. mallard) specific limits are contained within the AHM packages. Additionally, prescriptive regulation processes for pintail, canvasback and scaup have been adopted by the Service that determine daily bag limits depending on breeding population size, habitat conditions, and the season length established through the AHM process (see below).

In March 2008, the Pacific Flyway Council recommended that the Service set duck season frameworks in the Pacific Flyway based on a separate modeling approach that uses data from western mallards rather than mallards from the mid-continent region. This is because most of the mallards harvested in the Pacific Flyway originate from within the Flyway. The Service adopted the separate mallard model in August 2008 and plans to continue the use of that approach in 2015 (80 FR 19851-19863).

The western mallard approach uses the same regulatory packages as currently in use under continental AHM. Instead of a harvest objective constrained by the population goal in the NAWMP plan, the harvest objective for western mallards is based on a "shoulder approach", or a proportion of maximum sustained yield. Current modeling suggests that western mallards have been harvested at about 80% of their maximum potential, compared to about 90% for mid-continent mallards under the continental AHM approach.

As in mid-continent AHM, daily bag limits and season length will be set based on the status of the mallard breeding population. Bag limits for other species, including those for which individual harvest strategies have been adopted (pintail, canvasbacks, scaup) are based on mid-continent AHM and will be used in the Pacific Flyway. The State continues to have the option to establish more restrictive regulations.

Pintail Harvest Strategy

In 1997 a prescribed harvest strategy was developed (62 FR 39721 and 50662) with several modifications since inception. The harvest strategy was revised in 2002 when Flyway-specific harvest models were updated (67 FR 40131). In 2002 and 2003, the Service set pintail regulations that deviated from the strict prescriptions of the harvest strategy (i.e., partial season), but remained true to the intent of the strategy (67 FR 53694 and 59111; 68 FR 50019 and 55786). In 2004, the harvest strategy was modified to include a partial season option (69 FR 43696 and 52971). In adopting those changes, the USFWS and others called for review of the pintail strategy (69 FR 57142) and consideration of technical modifications that could be made to improve it. As a result of this review, the strategy was revised in 2006 to include updated flyway-specific harvest models, an updated recruitment model, and the addition of a procedure for removing bias in the breeding population size estimate based on its mean latitude (71 FR 50227 and 55656). Pursuant to requests from flyways and other stakeholders, a compensatory model was added to the strategy in 2007 (72 FR 18334, 31791, and 40198) as an alternative to the existing additive harvest model, and this update made the harvest strategy adaptive on an annual basis. The current strategy was developed in 2010 (75 FR 32873) and designed to maximize long-term cumulative harvest, which inherently requires perpetuation of a viable population. Hunting will be allowed when the observed breeding population is above 1.75 million birds (based on the lowest observed breeding population size since 1985 of 1.79 million birds in 2002).

The adaptive management protocol considers a range of regulatory alternatives for pintail harvest management that includes a closed season, 1-bird daily bag limit, or 2-bird daily bag limit. The maximum pintail season length depends on the general duck season framework (characterized as liberal, moderate, or restrictive and varying by Flyway) specified by mallard AHM.

An optimal pintail regulation is calculated under the assumption of a liberal mallard season length in all Flyways. However, if the season length of the general duck

season determined by mallard AHM is less than liberal in any of the Flyways, then an appropriate pintail daily bag limit would be substituted for that Flyway. Thus, a shorter season length dictated by mallard AHM would result in an equivalent season length for pintails, but with increased bag limit if the expected harvest remained within allowable limits.

Canvasback Harvest Strategy

Since 1994 the Service has followed a harvest strategy that if canvasback population status and production are sufficient to permit a harvest of 1-bird daily bag limit nationwide for the entire length of the regular duck season, while still attaining a projected spring population objective of 500,000 birds. In 2008 (73 FR 43290), the strategy was modified to incorporate the option for a 2-bird daily bag limit for canvasbacks when the predicted breeding population the subsequent year exceeds 725,000 birds. A partial season would be permitted if the estimated allowable harvest was within the projected harvest for a shortened season. If neither of these conditions can be met, the harvest strategy calls for a closed season.

Scaup Harvest Strategy

The scaup population has experienced a significant long-term decline. The 2007 population estimate was the third lowest on record. Recent population estimates have been more than 30 percent below the 55 year average with the biggest decline occurring over the last 25 years. There is evidence that the long-term scaup decline may be related to changes in scaup habitat. Several different ideas have been proposed to explain the decline, including a change in migration habitat conditions and food availability, effects of contaminants on scaup survival and reproduction and changing conditions on the breeding grounds possibly related to warming trends in portions of northern North America. Hunting has not been implicated as a cause of the past scaup decline, but the Service is committed to ensuring that harvest levels remain commensurate with the ability of the declining population to sustain harvest. In 2008 the Service implemented a new scaup harvest strategy (73 FR 43290) that used restrictive, moderate, and liberal regulatory alternatives. The scaup harvest strategy prescribes optimal harvest levels given an observed breeding population size and an explicit harvest management objective; maximize 95% of long-term cumulative harvest.

Service Changes in the Timing of Annual Migratory Bird Hunting Adoption

Currently, the Service publishes preliminary federal frameworks in mid-August and states adopt hunting regulations in early August based on the decisions of the Service Regulation Committee (SRC) in late July. The Service then publishes final frameworks, which contain the state-selected seasons in September. The existing system is based on the current year duck breeding population and habitat surveys conducted in May and early June and harvest data from the past season is available in

July. These data are used in the management models described above. Under the current system, the biological information used to establish hunting seasons does not become available until approximately the same time that recommendations by the Flyway Councils must be made in the existing process. This schedule leaves limited time for consultation and deliberation, and restricts the amount of time allowed for public comment and for States to conclude their own regulatory process (USDI 2013). The Service implemented the 2013 Final Supplemental Environmental Impact Statement (FSEIS 2013) by adopting the preferred alternative of combining early and late season regulations processes and modifying the AHM framework to allow development of regulatory recommendations based on predictions of waterfowl population status utilizing biological data from the previous year.

Beginning with the 2016 hunting seasons (79 FR 56864), a new schedule will be used for setting annual migratory bird hunting regulations. The current early and late season regulatory actions will be combined into a single process that will establish migratory bird hunting seasons much earlier than the current system. Under the new process, proposed hunting season frameworks for a given year will be developed in the fall of the prior year. Those frameworks will be finalized a few months later, thereby enabling the state agencies to select their seasons by late April and the Service will publish final frameworks in early summer.

Biological data for the following year will not be available in the fall, when the Flyway Councils and the Service will be developing hunting regulations for the next year. Thus, regulation development will be based on predictions derived from long-term biological information and established harvest strategies (as described above). This process will continue to use the best science available and will balance hunting opportunities with long-term migratory game bird conservation, while fulfilling all administrative requirements. Existing individual harvest strategies have been modified using either data from the previous year(s) or model predictions to fit this new schedule. Many existing regulatory prescriptions used for Canada Goose, Sandhill Cranes, Mourning Doves, and American Woodcock currently work on this basis. Uncertainty associated with these population status predictions has been accounted for and incorporated into the decision-making process. The Service concluded (Boomer, *et al.* 2015) that this uncertainty should not result in a disproportionately higher harvest rate for any stock, nor substantially diminish harvest opportunities, either annually or on a cumulative basis.

There will be a one-time overlap in the regulatory processes for the 2015-16 and 2016-17 hunting seasons. The regulatory schedule for the 2016-17 seasons will begin in mid-June 2015 with the first SRC meeting. Flyway technical committees and Councils will meet in September and early October of 2015 following the release of the 2015 population status reports (breeding population surveys) and harvest reports in mid-August and the 2015 AHM report in early September. After Flyway Council meetings, the SRC and Flyway Council Consultants will meet in late October to review

information on the status of migratory birds and develop recommendations for the 2016–17 seasons. Proposed season frameworks, a 30-day public comment period, and final season frameworks will then follow with ultimate publication of all 2016-17 migratory game bird hunting seasons in late May to mid-June of 2016.

Existing Conditions

Northeastern Zone: In that portion of California lying east and north of a line beginning at the intersection of Interstate 5 with the California-Oregon line; south along Interstate 5 to its junction with Walters Lane south of the town of Yreka; west along Walters Lane to its junction with Easy Street; south along Easy Street to the junction with Old Highway 99; south along Old Highway 99 to the point of intersection with Interstate 5 north of the town of Weed; south along Interstate 5 to its junction with Highway 89; east and south along Highway 89 to Main Street in Greenville; north and east to its junction with North Valley Road; south to its junction of Diamond Mountain Road; north and east to its junction with North Arm Road; south and west to the junction of North Valley Road; south to the junction with Arlington Road (A22); west to the junction of Highway 89; south and west to the junction of Highway 70; east on Highway 70 to Highway 395; south and east on Highway 395 to the point of intersection with the California-Nevada state line; north along the California-Nevada state line to the junction of the California-Nevada-Oregon state lines west along the California-Oregon state line to the point of origin.

Ducks: From the first Saturday in October extending for 105 days, 7/day which may include 7 mallards, 2 hen mallard, 2 pintail, 1 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: From the first Saturday in October extending for 100 days, 25/ day, up to 15 white geese and up to 10 dark geese, but not more than 2 Large Canada geese. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with Duck Season. 25/day. Possession limit triple the daily bag.

Youth Hunting Days: The Saturday fourteen days before the opening of waterfowl season extending for 2 days.

Falconry Take of Ducks: Open concurrently with duck season extending for 105 days. 3/day. Possession limit triple the daily bag.

Southern San Joaquin Valley Zone: All of Kings and Tulare counties and that portion of Kern County north of the Southern California Zone.

Ducks: From the third Saturday in October extending for 100 days, 7/day which may include, 7 mallards, 2 hen mallards, 2 pintail, 1 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: From the third Saturday in October extending for 100 days, 25/ day, up to 15 white geese and up to 10 dark geese. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with Duck Season, 25/day. Possession limit triple the daily bag.

Youth Hunting Days: The Saturday following the closing of waterfowl season extending for 2 days.

Falconry Take of Ducks: Ducks only, concurrent with duck season and January 31 – February 1, 2015. 3/day. Possession limit triple the daily bag.

Southern California Zone: In that portion of southern California (but excluding the Colorado River zone) lying south and east of a line beginning at the mouth of the Santa Maria River at the Pacific Ocean; east along the Santa Maria River to where it crosses Highway 166 near the City of Santa Maria; east on Highway 166 to the junction with Highway 99; south on Highway 99 to the crest of the Tehachapi Mountains at Tejon Pass; east and north along the crest of the Tehachapi Mountains to where it intersects Highway 178 at Walker Pass; east on Highway 178 to the junction of Highway 395 at the town of Inyokern; south on Highway 395 to the junction of Highway 58; east on Highway 58 to the junction of Interstate 15; east on Interstate 15 to the junction with Highway 127; north on Highway 127 to the point of intersection with the California-Nevada state line.

Ducks: From the third Saturday in October extending for 100 days, 7/day which may include, 7 mallards, 2 hen mallards, 2 pintail, 1 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: From the third Saturday in October extending for 100 days, 18/day, up to 15 white geese, up to 3 dark geese. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with duck season, 25/day. Possession limit triple the daily bag.

Youth Hunting Days: The Saturday following the closing of waterfowl season extending for 2 days.

Falconry Take of Ducks: Concurrent with duck season and January 26 – January 30, 2015. 3/day. Possession limit triple the daily bag.

Colorado River Zone: In those portions of San Bernardino, Riverside, and Imperial counties lying east of the following lines: Beginning at the intersection of Highway 95 with the California-Nevada state line; south along Highway 95 to Vidal Junction; south through the town of Rice to the San Bernardino-Riverside county line on a road known as "Aqueduct Road" in San Bernardino County; south from the San Bernardino-Riverside county line on road known in Riverside County as the "Desert Center to Rice Road" to the town of Desert Center; east 31 miles on Interstate 10 to its intersection with the Wiley Well Road; south on this road to Wiley Well; southeast along the Army-Milpitas Road to the Blythe, Brawley, Davis Lake intersections; south on the Blythe-Brawley paved road to its intersection with the Ogilby and Tumco Mine Road; south on this road to Highway 80; east seven miles on Highway 80 to its intersection with the Andrade-Algodones Road; south on this paved road to the intersection of the Mexican boundary line at Algodones, Mexico.

Ducks: From the third Friday in October extending for 101 days, 7/day which may include 7 mallards, 2 hen mallards or Mexican-like ducks, 2 pintail, 1 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: From the third Friday in October extending for 101 days, 10/day, up to 10 white geese, up to 4 dark geese. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with Duck Season, 25/day, 25 in possession.

Youth Hunting Days: The Saturday following the closing for waterfowl season.

Falconry Take of Ducks: Ducks only. Concurrent with duck season and from January 26 – 29, 2015. 3/day. Possession limit triple the daily bag.

Balance of State Zone: That portion of the state not included in Northeastern California, Southern California, Colorado River or the Southern San Joaquin Valley zones.

Ducks: From the third Saturday in October extending for 100 days, 7/day which may include 7 mallards, 2 hen mallards, 2 pintail, 1 canvasback, 2 redheads, 3 scaup during the 86-day season. Possession limit triple the daily bag.

Geese: Early Season: Large Canada only from the Saturday closest to October 1 for a period of 5 days EXCEPT in the North Coast Management Area where Large Canada geese are closed during the early season. Regular Season: Dark and white geese from the third Saturday in October extending for 100 days EXCEPT in the Sacramento Valley Special Management Area where the white-fronted goose season will close after December 21. Late Season: White-fronted geese and white geese from the third Saturday in February extending for a period of 5 days EXCEPT in the Sacramento Valley Special Management Area where the white-fronted geese is closed. During the Late Season, hunting is not permitted on wildlife areas listed in Sections 550 – 552 EXCEPT on Type C wildlife areas in the North Central Region. Possession limit triple the daily bag.

Coots and Moorhens: Concurrent with Duck Season, 25/day. Possession limit triple the daily bag.
Youth Hunting Days: The Saturday following the closing of waterfowl season extending for 2 days.

Falconry Take of Ducks: Open concurrently with duck season and January 31 – February 1, 2015. 3/day. Possession limit triple the daily bag.

North Coast Special Management Area: All of Del Norte and Humboldt counties.

All Canada Geese: From the last Friday in October extending for a period of 87 days (Regular Season) and from the third Saturday in February extending for a period of 18 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016. Up to 10/day Canada geese of which only 1 may be a Large Canada goose, EXCEPT during the Late Season the bag limit on Large Canada geese is 0/day. Possession limit triple the daily bag.

Falconry Take of Ducks: Geese only. Concurrent with Small Canada goose season. 3/day. Possession limit triple the daily bag.

Humboldt Bay South Spit (West Side) Special Management Area: Beginning at the intersection of the north boundary of Table Bluff County Park and the South Jetty Road; north along the South Jetty Road to the South Jetty; west along the South Jetty to the mean low water line of the Pacific Ocean; south along the mean low water line to its intersection with the north boundary of the Table Bluff County Park; east along the north boundary of the Table Bluff County Park to the point of origin.

All species: Closed during brant season

Sacramento Valley (West) Special Management Area: Beginning at the town of Willows; south on Interstate 5 to the junction with Hahn Road; east on Hahn Road and the Grimes-Arbuckle Road to the town of Grimes; north on Highway 45 to its junction with Highway 162; north on Highway 45-162 to the town of Glenn; west on Highway 162 to the point of beginning.

White-fronted geese: Closed after Dec 21, 3/day. Possession limit triple the daily bag.

*Morro Bay Special Management Area***:** Beginning at a point where the high tide line intersects the State Park boundary west of Cuesta by the Sea; northeasterly to a point 200 yards offshore of the high tide line at the end of Mitchell Drive in Baywood Park; northeasterly to a point 200 yards offshore of the high tide line west of the Morro Bay State Park Boundary, adjacent to Baywood Park; north to a point 300 yards south of the high tide line at the end of White Point; north along a line 400 yards offshore of the south boundary of the Morro Bay City limit to a point adjacent to Fairbanks Point; northwesterly to the high tide line on the sand spit; southerly along the high tide line of the sand spit to the south end of Morro Bay; easterly along the Park boundary at the high tide line to the beginning point.

All species: Open in designated areas only

Martis Creek Lake Special Management Area: The waters and shoreline of Martis Creek Lake, Placer and Nevada counties.

All species: Closed until Nov 16

*Northern Brant Special Management Area***:** Del Norte, Humboldt and Mendocino Counties.

Black Brant: From November 7 extending for 30 days. Possession limit triple the daily bag.

Balance of State Brant Special Management Area: That portion of the state not included in the Northern Brant Special Management Area.

Black Brant: From the second Saturday in November extending for 30 days. Possession limit triple the daily bag.

Imperial County Special Management Area: Beginning at Highway 86 and the Navy Text Base Road; south on Highway 86 to the town of Westmoreland; continue through

the town of Westmoreland to Route S26; east on Route S26 to Highway 115; north on Highway 115 to Weist Rd.; north on Weist Rd. to Flowing Wells Rd.; northeast on Flowing Wells Rd. to the Coachella Canal; northwest on the Coachella Canal to Drop 18; a straight line from Drop 18 to Frink Rd.; south on Frink Rd. to Highway 111; north on Highway 111 to Niland Marina Rd.; southwest on Niland Marina Rd. to the old Imperial County boat ramp and the water line of the Salton Sea; from the water line of the Salton Sea, a straight line across the Salton Sea to the Salinity Control Research Facility and the Navy Test Base Road; southwest on the Navy Test Base Road to the point of beginning.

White geese: From the first Saturday in November extending for a period of 86 days (Regular Season) and from the first Saturday in February extending for 16 days (Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016. Up to 15 geese. Possession limit triple the daily bag.

Proposed Changes and Analysis

- Provide a range of waterfowl hunting season lengths (which may be split into two segments) between 38 and 107 days (including 2 youth waterfowl hunt days) for all hunting methods. A range of daily bag limits is also given for ducks in all zones. In addition, an increase in the bag limit for geese in the Colorado River Zone is proposed to match waterfowl regulations in neighboring Arizona. Federal regulations require that California's hunting regulations conform to those of Arizona in the Colorado River Zone and with Oregon in the North Coast Special Management Area. See the table below for season and bag limit ranges.

  The existing waterfowl hunting regulations establish specific season dates and daily bag limits for each zone. This proposal provides ranges for the season dates and daily bag limits. These ranges are necessary as the specific opening and closing dates and daily bag limits cannot be proposed until the California Waterfowl Breeding Population Survey is completed in May and the Service has established federal regulation "frameworks" for the 2015/16 waterfowl hunting season. The Service will establish the frameworks in late July after the analysis of current waterfowl population survey, other data, and input from the Flyway Councils and the public.

- Provide a range of brant season lengths in the Northern Brant and Balance of State Brant special management areas to allow for a possible increase in season length.

  Allow for an increase of 7 days onto the current 30 day season in both special

management areas.

The existing brant season lengths in the above mentioned special management areas are 30 days. This proposal provides a possible season length increase of 7 days. Approval is needed from the Flyway Council and the Service. To liberalize hunting regulations for brant, the Pacific Flyway Management Plan for the Pacific population of brant requires a 3 year average exceeding 135,000 based on the midwinter survey (Pacific Flyway Council 2002). Predicting the harvest for a 7 day increase is problematic given the low numbers of brant hunters. In addition, there are many factors that may influence harvest including weather, migration timing and hunter skill. Based on the Service's parts collection survey data from November and December, long term (1989 – 2012) average daily harvest statewide (based on a bag limit of 2 birds per day) is approximately 66 birds per day, with a range of 0 to 300 per day. However this trend varies by special management area and has decreased significantly through time. Brant daily harvest rates have decreased from the long term average of 37 per day in the Balance of State Special Management Area (BOS) and 29 in the Northern Brant Special Management Area (NB) to an average of 10 per day in the BOS and 15 in the NB (current 3 year average). For both special management areas combined, this is a decrease from 66 brant per day to 25. Based on this data we predict the addition of a 7 day season may result in an increase between 170 (current 3 year average) and 464 brant harvested (long-term average).

POLICY CONSIDERATIONS

The legislature formulates laws and policies regulating the management of fish and wildlife in California. The general wildlife conservation policy of the State is to encourage the conservation and maintenance of wildlife resources under the jurisdiction and influence of the State (Section 1801, Fish and Game Code). The policy includes several objectives, as follows:

1. To provide for the beneficial use and enjoyment of wildlife by all citizens of the State;
2. To perpetuate all species of wildlife for their intrinsic and ecological values, as well as for their direct benefits to man;
3. To provide for aesthetic, educational, and non-appropriative uses of the various wildlife species;
4. To maintain diversified recreational uses of wildlife, including hunting, as proper uses of certain designated species of wildlife, subject to regulations consistent with public safety, and a quality outdoor experience;
5. To provide for economic contributions to the citizens of the State through the recognition that wildlife is a renewable resource of the land by which economic return can accrue to the citizens of the State, individually and collectively, through regulated management. Such management shall be consistent with the maintenance of healthy and thriving wildlife resources and the public ownership status of the wildlife resource;
6. To alleviate economic losses or public health and safety problems caused by wildlife; and
7. To maintain sufficient populations of all species of wildlife and the habitat necessary to achieve the above-state objectives.

With respect to migratory game birds, Sections 355 and 356 of the Fish and Game Code provides that the Commission may adopt migratory game bird hunting regulations as long as they are within the federal frameworks.

The Department has concluded that the proposed project will not have a significant adverse effect on the environment. No mitigation measures or alternatives to the proposed project are needed.

POTENTIAL FOR SIGNIFICANT EFFECTS

Previous reviews of other potential environmental effects were analyzed extensively in previous environmental documents. The analysis of these fifteen factors regarding migratory game bird hunting were examined in the prior year environmental document (incorporated by reference, August 2006, State Clearinghouse Number 2006042115, available at 1812 9th Street, Sacramento 95811) and certified by the Fish and Game Commission. The modifications proposed are to increase hunter opportunity and reduce depredation of some goose populations that winter in California. The Department concludes that the proposed project and existing hunting regulations will not cause significant adverse effects on the factors analyzed in the 2006 FED and summarized below.

EFFECTS OF HABITAT DEGRADATION

Breeding Areas

The 2006 analysis was presented on page 100 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The primary impacts on breeding waterfowl from agriculture are the cultivation or tillage of nesting cover (Higgins 1977, Kirsch 1969, Milonski 1958). A secondary effect of the agricultural process is the tillage of lands right up to the edges of ponds or other water sources, which effectively eliminates brood rearing habitat. These activities in the prairies are especially prevalent in years of drought where farmers are able to intensively farm all of a wetland basin.

In the primary duck production areas of Canada, there is greater opportunity during drought periods for intensive farming and greater demand for available forage for cattle. Unfortunately, waterfowl must compete for the same resources. Agriculture does not generally impact breeding habitats for the majority of goose populations, because most goose nesting occurs in undeveloped areas of the arctic.

Wintering Areas

The 2006 analysis was presented on page 101 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Wetland habitats in California have been reduced from an estimated five million acres to less than 450,000 acres at present. Most of these wetlands have been converted to agricultural uses, but urban developments have also reduced the wetland acreage in California. In the critically important Central Valley,

about 70 percent of the remaining acreage is in private ownership and managed primarily as duck hunting clubs.

Some of the agricultural areas continue to provide habitat of value to waterfowl through the availability of waste grains and the provision of nesting cover. However, certain agricultural activities, such as fall plowing, can reduce food availability for waterfowl.

Habitat conversions by humans have reduced the habitat available for waterfowl. These conversions take place over a period of time, such that substantial habitat losses during the period of the proposed project are not likely to occur and act in a cumulative manner with the hunting of waterfowl, coots and moorhens in California that would result in significant adverse effects to the environment.

EFFECTS OF DISEASES, PESTICIDES, AND OTHER CONTAMINANTS

The 2006 analysis was presented on page 101 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Diseases, pesticides and other contaminants will likely cause the death of waterfowl, coots, moorhens, and common snipe in California. Even though some losses to disease can be in the tens of thousands of individual birds, these losses are small relative to the populations present in the State. Accordingly, the Department concludes that the combination of the proposed project and existing regulations and potential losses to diseases and other contaminants will not result in a significant adverse impact to waterfowl, coot and moorhen populations in California in 2014-15.

EFFECTS OF ILLEGAL HARVEST

The 2006 analysis was presented on pages 110 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The Department currently has a staff of about 350 game wardens stationed throughout the State. The Department analyzed waterfowl-related citations to estimate the extent of waterfowl mortality occurring as a result of illegal take of waterfowl in California. The level of illegal harvest is difficult to determine (USDI 1988a:29-30). In an attempt to model the possible extent of illegal harvest, the Service compared known survival rates of mallards against known hunting mortality (USDI 1988a). Estimated average annual survival rates are 66 percent and estimated hunting mortality is 18 percent (based on recoveries of banded birds), all other forms of mortality would thus equal 16 percent of the population. Since other mortality factors are known to exist (disease, predation, starvation, weather), it would seem that illegal harvest is considerably less than 16 percent and is probably not a significant portion of the annual mortality of mallards (USDI 1988a).

EFFECTS OF SUBSISTENCE HARVEST

The 2006 analysis was presented on page 112 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Native and nonnative peoples living in remote areas of Alaska and Canada are dependent on migratory birds and other wildlife for subsistence. They take birds and eggs during spring and summer for food (USDI 1988a:26). These levels of harvest do not appear to be acting as a cumulative effect in conjunction with current hunting, because in general, the populations of migratory birds that are being monitored continue to increase. In particular, goose populations affected by this project are growing and some are at or near record levels.

EFFECTS OF HARVEST OUTSIDE UNITED STATES

The 2006 analysis was presented on page 113 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The harvest of waterfowl in areas outside of California is easier to quantify than to determine what specific effects it has on California's migratory and resident populations because of mixing of different populations on the winter grounds. Harvest in two areas, Canada, where the majority of California's waterfowl originate, and Mexico, where segments of some populations winter, could act in addition to the harvest in California.

This information identifies the need for migratory game bird management to be conducted on a flyway, multi-flyway, or population basis. The total harvest of waterfowl throughout North America results in a decrease in the number of waterfowl in that year. Issues, such as subsistence harvest in Alaska and Canada and the harvest of birds outside the United States, clearly identify the need for a comprehensive perspective. The establishment of framework regulations by the Service addresses this issue by modifying hunting regulations in response to long-term population fluctuations. The Department concludes that the combination of the increased California harvest from this proposed project and harvest outside the State will not result in significant adverse impacts to migratory bird populations.

EFFECTS OF MAJOR DEVELOPMENT PROJECTS

The 2006 analysis was presented on page 115 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Migratory game bird habitat will continue to be altered in California as the human population increases. However, strong enforcement of State and Federal laws, such as the Clean Water Act, as well as Commission policy of no net

loss of wetlands, will help to minimize any adverse effect. Changes in agricultural policies at the national level may also affect the quantities of waste grain available to some species of migratory game birds. Competitive urban needs for water, especially as it relates to rice production, may affect waterfowl food supplies in the future. This will be especially prevalent when drought conditions return.

EFFECTS ON LISTED SPECIES

The 2006 analysis was presented on page 91 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The Department is charged with the responsibility to determine if any hunting regulations will impact threatened and endangered species. It complies with this mandate by consulting internally and with the Commission when establishing migratory game bird regulations to ensure that the implementation of the proposed project and existing hunting regulations do not affect these species. The Department has concluded that, based on conditions of the proposed project and existing hunting regulations, differences in size, coloration, distribution, and habitat use between the listed species and legally harvested migratory game birds, the proposed project will not jeopardize these species.

EFFECTS ON MIGRATORY BIRD HABITATS

Habitat Protection Effects

The 2006 analysis was presented on page 93 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Waterfowl, coot and moorhen hunting in California provide a positive incentive for private individuals to acquire, develop, and maintain habitat that might otherwise be converted to other uses. Habitat provided by hunters is entirely available at night as a roosting site and is partially available during the day during hunting season (during days when private wetlands are not hunted or on portions of private wetlands that are not hunted). Long-term vegetative changes may occur in areas that are managed specifically for wintering waterfowl foods. This may affect species more dependent upon climax vegetation than waterfowl, coots and moorhens, which favor early successional stages of vegetation.

Short-term Effects on Habitat

The 2006 analysis was presented on pages 93 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Some short-term impacts of the proposed project, and existing hunting regulations such as vegetative trampling and litter in the form of spent shell

casings, occur. These impacts are considered minor, and the effects on vegetation are generally reversed in the next growing season (USDI 1975:205).

EFFECTS ON RECREATIONAL OPPORTUNITIES

The 2006 analysis was presented on page 96 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The implementation of the proposed project and existing regulations will result in the presence of hunters, their vehicles, and their dogs in migratory bird habitats throughout the State. The enjoyment of observing waterfowl by those opposed to hunting may be reduced by some degree by the knowledge or observation of hunters in the field. Because the proposed project and existing regulations occurs for no more than 107 days in largely unpopulated areas of the State, this will not result in significant adverse environmental impacts.

EFFECTS OF METHODS OF TAKE AND IMPACTS ON INDIVIDUAL ANIMALS

The 2006 analysis was presented on page 88 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Section 20.21, subpart C, of Part 20, Title 50, CFR, and Section 507, Title 14, CCR, stipulate the methods of hunting that are allowed by the Service for migratory game birds. The Commission, in concert with Federal law, has authorized the use of shotguns 10-gauge or smaller, muzzle-loading shotguns, falconry, bow and arrow and crossbows, and dogs for retrieval or take. Historically, these methods of take have been used on a variety of migratory game birds throughout North America. In previous regulation-setting processes, both the Service and the Commission have stipulated restrictions on equipment and methods of take which attempt to provide for reasonably efficient and effective taking of waterfowl, coots and moorhens.

EFFECTS FROM DROUGHT

Drought cycles are part of the ecological system in California and waterfowl are well adapted to dealing with low water years e.g., delaying nest initiation, re-nesting capability, and reduced clutch size. Still, multi-year droughts can reduce waterfowl populations on a local scale and a much broader continental scale. Drought conditions impact waterfowl in a variety of ways including: degraded habitat quality which creates poor breeding habitat conditions (McLandress *et al*. 1996), lower food production (both natural and agricultural) which can limit the ability of birds to migrate and breed successfully (McWilliams *et al.* 2004), as well as expose large

portions of waterfowl populations to disease. This section summarize potential impacts that drought may have on waterfowl throughout the annual cycle in California.

California is an area of continental importance for waterfowl during various annual life history events (CVJV 2009). Winter is more significant than breeding due to the abundance of waterfowl that migrate here from northern breeding areas (Bellrose 1980). Stresses encountered on wintering areas can have carry over effects during spring migration or the breeding season, which ultimately can limit populations (Klaassen 2002, Inger *et al.* 2008). It is critical that adequate habitat for waterfowl is provided during winter.

Breeding

Female ducks find a mate on wintering areas and breed where they were hatched because of high natal fidelity (Rowher and Anderson 1988). Critical components to when and where a hen will nest are available brood water and adjacent upland habitat. In dry years females may leave their natal area and migrate to areas with better quality habitat (Johnson and Grier 1988). Females need time in a location to build energy stores such as protein which is typically associated with aquatic invertebrates (Krapu 1974). Egg formation and laying will be delayed until conditions are adequate (Ankney and Alisauskas 1991). Early in the breeding season many species of ducks delay nest-initiation in response to drought. During periods of severe drought many species of waterfowl may not breed at all. If a rapid decline in water levels occurs midway into nesting or during incubation females may desert their nests (Smith, 1971). By not breeding when conditions are poor, birds enhance their survival and their probability of reproducing later when habitat conditions improve (Krapu *et al.* 1983).

Reduced recruitment can occur when ducks travel great distances to find adequate habitat conditions for nesting or re-nesting because energy reserves have been depleted. Reduced recruitment can result from: choosing not to nest, smaller clutch sizes, a lower likelihood of laying a second clutch (Grand and Flint 1991) and later laying date which has been shown to reduce nest success and brood survival in some species (Dzus and Clark 1998). Further, females that migrate out of their natal area may also have a higher mortality rate due to increase susceptibility to predation in unfamiliar areas. Reduced recruitment and adult survival could decrease short-term population levels and if poor habitat conditions persist for subsequent years, reduce long term population levels. An adaptation to drought is in years of good habitat conditions, hens can raise numerous broods giving waterfowl populations the ability to recover quickly (McLandress *et al.* 1996).

Critical breeding areas for ducks in California as identified by the Department's breeding population survey for waterfowl (Figure 3-A) are the Sacramento Valley, San Joaquin Valley Grasslands, Suisun Marsh and high desert region of Northeastern California. Figures are for mallards because they make up the majority of the breeding duck population in California (see Figure D-4). Breeding population numbers in the Central Valley (i.e. Sacramento and San Joaquin valleys) are correlated to precipitation as well as recruitment from previous years (Figure 3-

B and C). Breeding mallard populations in northeastern California however, do not follow precipitation trends (Figure 3-D) indicating that other factors may be impacting duck production and breeding population trends in that region. The statewide breeding population of mallards has remained relatively stable except for northeastern California where the population trends are decreasing. The cause of this decline is unknown but speculated to be the lack of adequate brood water in early spring and the increase in invasive plant species (e.g. *Lepidium sp*.) throughout the area (Dave Mauser, Klamath Basin NWR personal communication).

Another breeding population indicating a decline is Canada geese that nest in northeastern California. Historically, Canada geese nested in this region in larger numbers but have declined considerably (Figure 4). Climate change is speculated (i.e. dry conditions over the long term; NOAA unpublished data) to play a significant role in the decline but no analysis or studies has been conducted (Melanie Weaver CDFW personal communication). The Department will include an analysis of possible climate change impacts as well as a survival analysis from Department leg banding data in an upcoming management plan for this population.

Molting

During late July, male ducks will typically migrate to a large permanent water marsh to molt while females follow soon after nesting in August. Like nest site fidelity, ducks will molt in the same location as previous years (Yarris *et al.* 1994). One study has indicated that 60 percent of mallards that breed in the Central Valley will migrate 280 miles to northeastern California to molt while 25% molt in marshes in the Central Valley (Yarris *et al.* 1994). Molt is an extremely vulnerable time for ducks because they become completely flightless for 30 – 40 days. Marsh water levels are critically important during the molting period and must be maintained or birds could be subject to depredation by mammalian and avian predators (Arnold *et al.* 1987).

Avian botulism

Botulism outbreaks typically occur in marshes with warm water, little flow, high organic load (rotting vegetation) and high amounts of algae (Rocke and Samuel 1999). Botulism is a bacterium that naturally occurs in wetland environments and persists in marshes with histories of outbreaks due to the release of spores into the environment. Ducks are infected by ingesting the bacterium and become paralyzed, eventually dying. Duck carcasses attract flies which lay eggs that produce maggots that in-turn eat the flesh of the carcass and consume botulism spore. Maggots drop into the water and are eaten by ducks in the marsh thereby escalating mortality events (Rocke and Samuel 1999). Outbreaks of avian botulism (Fleskes *et al.* 2010) often coincide with the molt cycle of ducks and the brood rearing stages of late nesting duck species. Many studies have been conducted to better understand the cycle of botulism and inform managers of how to prevent or minimize outbreaks

In California botulism outbreaks have been reported in every region of the state however, frequency is not well known due to reporting inconsistencies (Figure 5;

USGS National Wildlife Health Center personal communication). A robust analysis on this disease data is not possible because of the reporting inconsistences and the numerous factors possible that may have caused the outbreaks. In some years die-offs can be quite severe (Figure 5). Botulism outbreaks can kill large numbers of hens, broods and molting ducks (Fleskes *et al.* 2010).

During drought summer water allocation is reduced for managed wetlands in the Central Valley and the Klamath Basin in northeastern California. Decreasing the number of flooded wetlands increases concentrations of waterfowl, thus raising the chance of an outbreak and more birds being affected. Breeding mallards throughout California molt in the Klamath Basin. The Klamath Basin experiences botulism annually, even during normal water years (Figure 5-C). During drought years the potential for a high mortality event is great.

Wintering Waterfowl

Waterfowl migrate from northern latitudes to California beginning in August. Multiple stopover sites are used during migration to rebuild energy reserves. The Klamath Basin in northeastern California is one of the most important waterfowl stopover sites during fall and spring for waterfowl in the Pacific Flyway (Bellrose 1980). Peak numbers of waterfowl are seen on major wintering areas south of the Klamath Basin by December.

During early January, the Department and the Service and conduct the Midwinter Waterfowl Survey. This survey has been conducted since 1953 and has provided managers with midwinter indices of waterfowl species. During midwinter California supports 66 percent of all ducks (excluding mergansers; based on long term average 1955 – 2014) in the Pacific Flyway, 40 percent of which occur in the Sacramento Valley. Of total waterfowl in the Pacific Flyway (i.e. geese, ducks, swans, coots and cranes), California supports 73 percent, the Sacramento Valley alone supports 43 percent (Olson 2014, Department unpublished data). California waterfowl distribution based on this survey indicates the Sacramento Valley harbors 60 percent of total waterfowl, the San Joaquin has 20 percent, and the Delta, Suisun Marsh, northeastern California combined hold 10 percent of total waterfowl.

Sensitive wintering populations

Sensitive waterfowl subspecies also occur in California during winter. Tule greater white-fronted geese are monitored by the Department and Service through telemetry and population surveys throughout the winter in the Sacramento Valley, the Delta and northeastern California. This subspecies of white-fronted goose uses permanent marshes early in winter and begins to feed in rice fields during midwinter. The bulk of the Tule population overwinters (November to February) adjacent to and on the Sacramento National Wildlife Refuge Complex. A special management area that has a reduced season length and bag limit has been maintained in the Sacramento Valley for this population compared to the rest of the state. Department staff monitor harvest by actively measuring all greater white-fronted geese at check stations on the Sacramento National Wildlife Refuge Complex.

This population could be negatively impacted by poor body condition caused by limited habitat, particularly reduced rice decomposition flooding.

Wintering waterfowl habitat

Since the implementation of the NAWMP (USFWS 1986) and the subsequent initiation of the Central Valley Joint Venture (CVJV 1990), the wetlands of the Central Valley have fluctuated in size and quality (Fleskes *et al*. 2005, CVJV 2009). Wetland acres as of 2006 were estimated to be 205,900. Current wetland acres are being calculated as there have been a number of large easement properties acquired since 2006. The amount of wetland acres as well as the quality have increased since the last update (i.e. moist soil management and infrastructure).

Additionally, since 1996 changes in post-harvest rice straw decomposition have added an estimated 209,000 acres of flooded rice for wintering waterfowl in the Sacramento Valley (Garr 2014). Increased post-harvest flooded rice and increased wetland area is speculated to be the cause for the increasing densities of waterfowl seen in the Sacramento Valley relative to other areas on the midwinter survey (Fleskes and Yee 2005). Recent body condition studies of numerous wintering waterfowl species have improved significantly (Ely and Raveling 1989, Miller 1986, Thomas et al. 2008, Skalos *et al*. 2011) particularly within the Sacramento Valley. Numerous duck and goose species have changed their roosting and feeding habits considerably because of the increase in water on the landscape (Fleskes et al. 2005). For example, prior to post-harvest flooded rice Pacific greater white-fronted geese traveled an average of 17.5 miles from roost to forage areas. This distance has been reduced to 15 miles (14%) because the proximity of undisturbed roost areas (Ackerman et al. 2006). Increased body condition (Skalos *et al*. 2011) combined with undisturbed roost areas (Ackerman et al. 2006) has probably been a major contributor to the recovery of Pacific greater white-fronted geese since the record low in the mid 1970's (USFWS 2014b; Pacific greater white-fronted goose population indices). Waterfowl and non-game waterbird species have been known to use flooded agriculture in the Sacramento/San Joaquin Delta region (Shuford 1998) as well as the Tulare Basin in the San Joaquin Valley (Fleskes *et al*. 2013). Reduction of post-harvest agricultural field flooding because of drought in these regions could have a large impact on wintering waterfowl populations because most of the natural marsh habitat has been eliminated (Gilmer et al. 1982).

The CVJV has modeled the food resource needs of wintering ducks in California. The CVJV estimated that California currently has an adequate supply of food resources for all waterfowl species during winter. The drought model scenario decreased the total winter flooded wetlands from an estimated 197,200 to 148,000 acres and flooded rice from 305,000 to 135,000 acres in the Central Valley. Flooding rice for decomposition was assumed to be limited and at least 136,000 acres of the dry acreage would be harvested and not deep tilled post-harvest (therefore accessible). In this scenario energy available to ducks would be reduced to below adequate levels by mid-January (CVJV 2014).

Waterfowl can make up energetic shortfalls from limited food resources (Skalos et al. 2011) on wintering areas during migration if the adequate food resources are provided on stopover sites (Bauer *et al*. 2008). If the Central Valley has limited food resources for waterfowl, the CVJV speculates that further stress would be applied to waterfowl populations migrating through the Klamath Basin during spring due to the ongoing water allocation issues in that region (CVJV 2014).

Avian cholera

Avian cholera (*Pasturella multocida*) is a common winter bacterial infection in waterfowl. This disease agent occurs naturally in waterfowl populations and particular species (e.g. Lesser snow geese, Ross's geese, mute swans) tend to be reservoirs for cholera (Samuel et al. 2005, Pedersen *et al*. 2014). Environmental and physiological conditions that stress (e.g. prolonged cold temperatures, wind, precipitation, inadequate food resources and injury) birds tend to influence the expression of this disease. Blanchong et al. (2006) found that highly eutrophic water conditions are correlated to cholera abundance in wetlands. These conditions would be promoted in years of drought due to slow flow-through in wetlands. Eutrophic conditions would also be exacerbated by large concentrations of waterfowl defecating in wetlands, agricultural runoff (i.e. cattle and fertilizer) or other upstream sources of nutrients. This study also cited the increased abundance of cholera in wetlands with higher protein concentrations. Increased protein concentrations were correlated with the number of dead bird carcasses found emphasizing the need for monitoring and removal to stem outbreaks.

Figure 6 indicates the frequency and intensity of avian cholera mortality events in California as reported to the USGS Wildlife Health Center. Cholera outbreaks tend to be more common in the Sacramento Valley and northeastern California. This may be from colder temperatures experienced during winter but more likely from the high densities of waterfowl (particularly *Chen sp*.) at the time of the outbreak. Cholera outbreaks have the potential to be very severe; an outbreak in the Salton Sea during 1991 claimed an estimated 155,000 birds.

Concerning sensitive waterfowl populations Greater white-fronted geese (i.e.Tule geese) seem to be resistant to outbreaks of avian cholera (Blanchong 2006).

Hunter harvest impacts on waterfowl populations

Wintering numbers of mallards are relatively low compared to other wintering species and the population of mallards that breed in the state. A ten year average from the California midwinter survey indicate 1,217,000 Northern pintail, 575,500 Northern shoveler, 471,700 American wigeon, 415,000 American green-winged teal, compared to 298,800 mallards counted on the survey. Nonetheless, mallards are the most sought after species by hunters by proportion of population (USFWS 2014c).

Currently, little evidence supports hunter harvest having an additive effect on duck population trends (Afton and Anderson 2001). Rather, available breeding habitat (i.e. nesting habitat and brood habitat) is the driving factor behind most duck

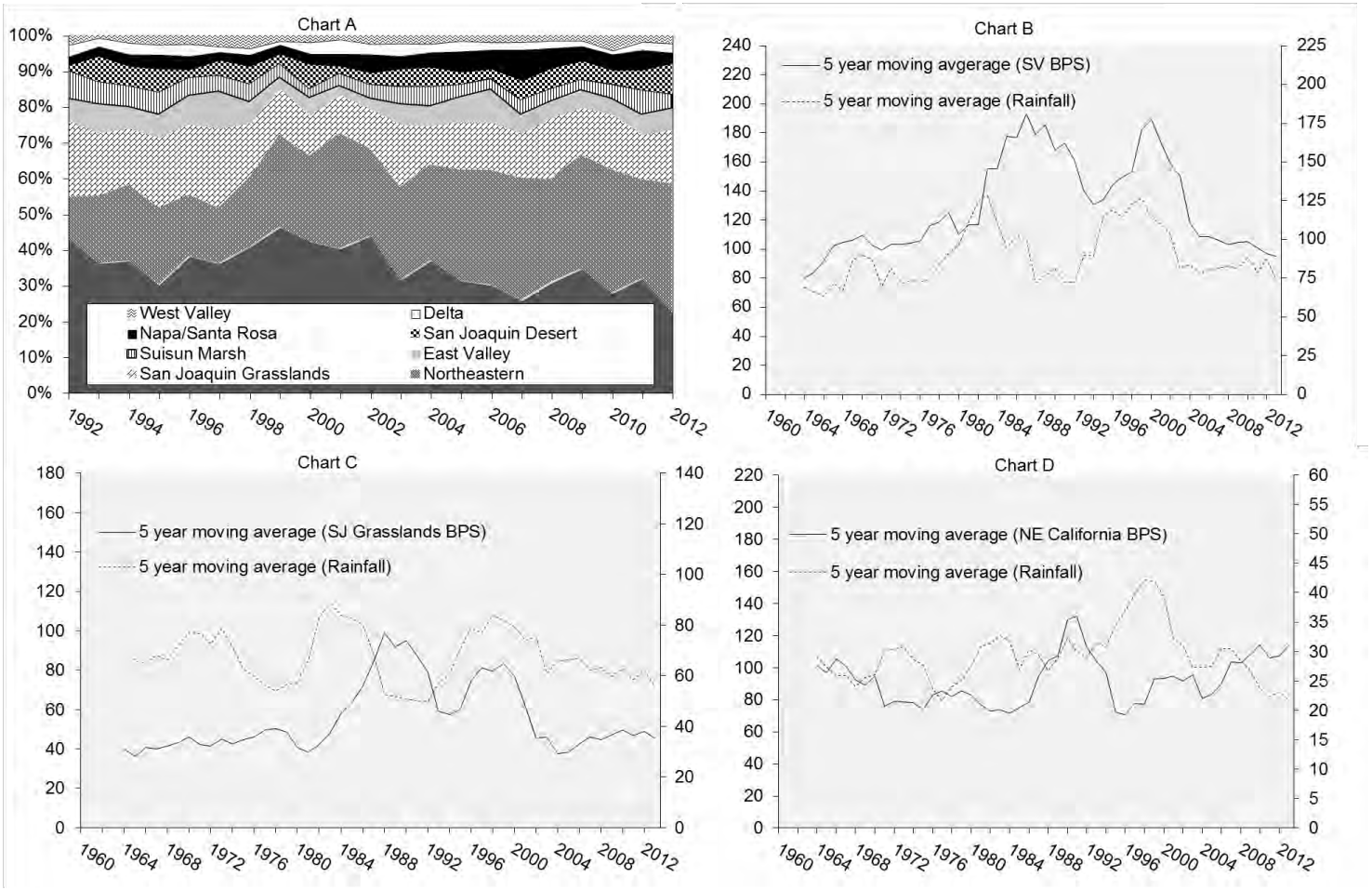
population changes. Even in absence of hunter or other mortality factors, density dependent factors on breeding areas (available habitat, predator response etc.) drive duck populations (Newton 1994, Clark and Shulter 1999, Viljugrein et al. 2005). Figure 7 compares hunter harvest in relation to the breeding population of mallards in California. Harvest has very little correlation (Chart A; R^2=0.06, Chart B; R^2=0.05, respectively) with subsequent breeding population levels.

A number of goose populations have increased substantially in the Pacific Flyway in recent years, with continued hunting and more liberal season and bag limits. Examples are the Pacific greater white-fronted goose and the Ross's goose. Pacific greater white-fronted geese have increased from 75,000 in 1978 to and 650,000. Surveys conducted in the 1960's estimated Ross's geese at 10,000 while the current population estimate is 700,000. When goose populations are low they are vulnerable to over exploitation by sport hunting. Ducks can breed successfully at age one while geese will breed at age two to three (refer to "K selection"). In the past, goose populations have been subject to overexploitation by predators (e.g. Aleutian goose; PFC 2006[b]) or overharvest by subsidence or sport hunting (Pacific greater white-fronted goose; Pamplin 1986). Recovery actions have successfully increased these populations.

The Service implemented a general harvest strategy for setting duck framework regulations that regularly occur in California and are sought after by hunters (as explained in the Adaptive Harvest Management Section under Background and Existing Conditions). These harvest management strategies ensure duck populations are healthy over the long-term while providing hunting opportunity consistent with the long-term health. As a participant of the Pacific Flyway Council, the Department reviewed and voted to adopt these management strategies for establishing seasons and bag limits. In addition, the Department participates in the monitoring of various populations, both wintering and breeding. If defined populations goals are not met than bag or season limit reductions are triggered. For example the California Breeding Population Survey is used in the Adaptive Harvest Management strategy that establishes regulatory packages for most duck species for all 11 states in the Pacific Flyway.

The Pacific Flyway is currently working on revising the management plan for Tule white-fronted geese. The plan will incorporate population estimates derived from Department ground surveys, telemetry data and public hunt area harvest from check station measurements. These management actions will ensure that population levels of waterfowl species in California are being monitored and hunter harvest is sustainable over the long term.

Figure 3. Proportion of California breeding population by area (Chart A) and area specific mallard BPS estimates with total rainfall (Charts B-D, mallard on left Y axis in thousands; precipitation on right Y axis in inches)



-Total rainfall amounts based on 5 year average from January to April.
-SV total rainfall from Woodland, Willows and Red Bluff weather stations.
-SJ Grasslands total rainfall from Stockton and Merced weather stations.
-NE total rainfall from Tule Lake and Alturas weather stations.

Figure 4. California Department of Fish and Wildlife, Northeastern California Canada Goose Survey 1950-2013.

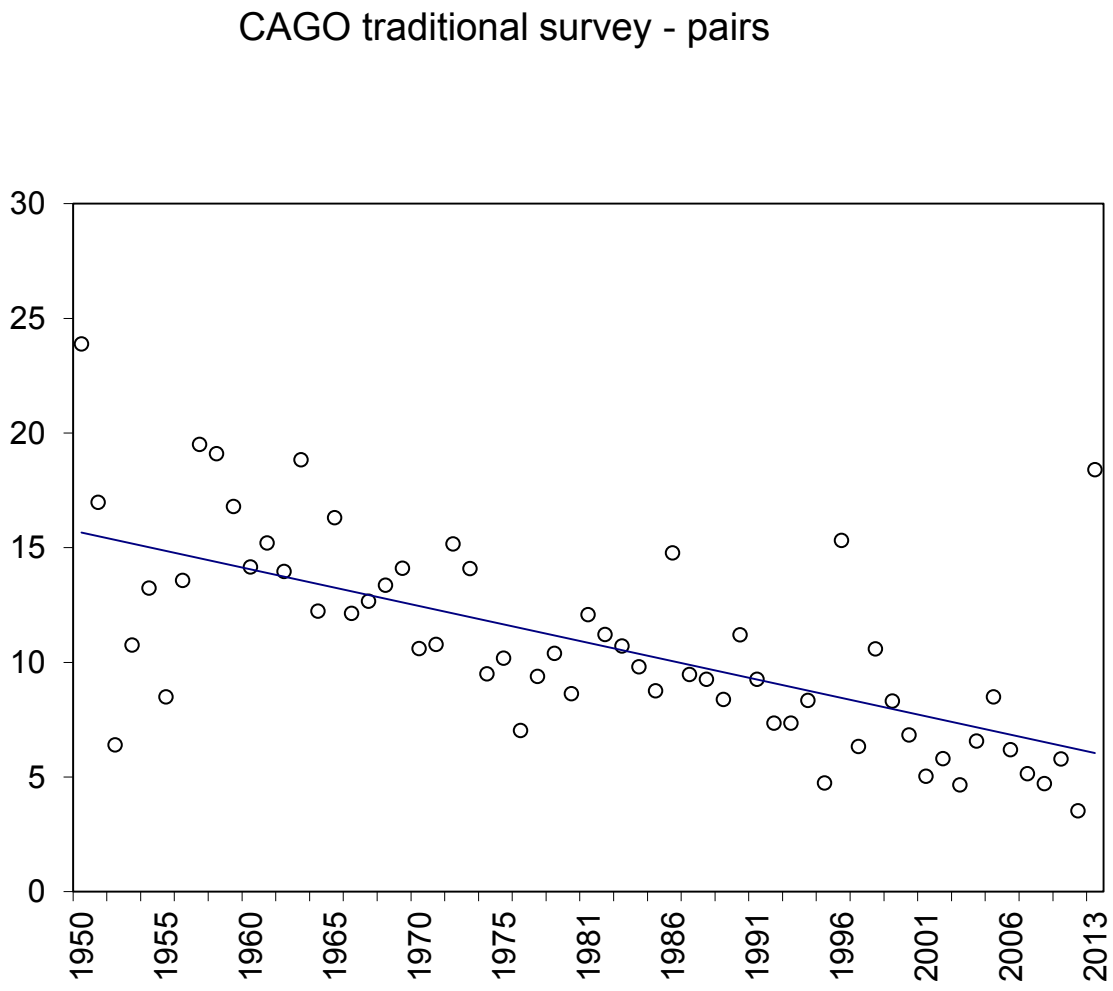
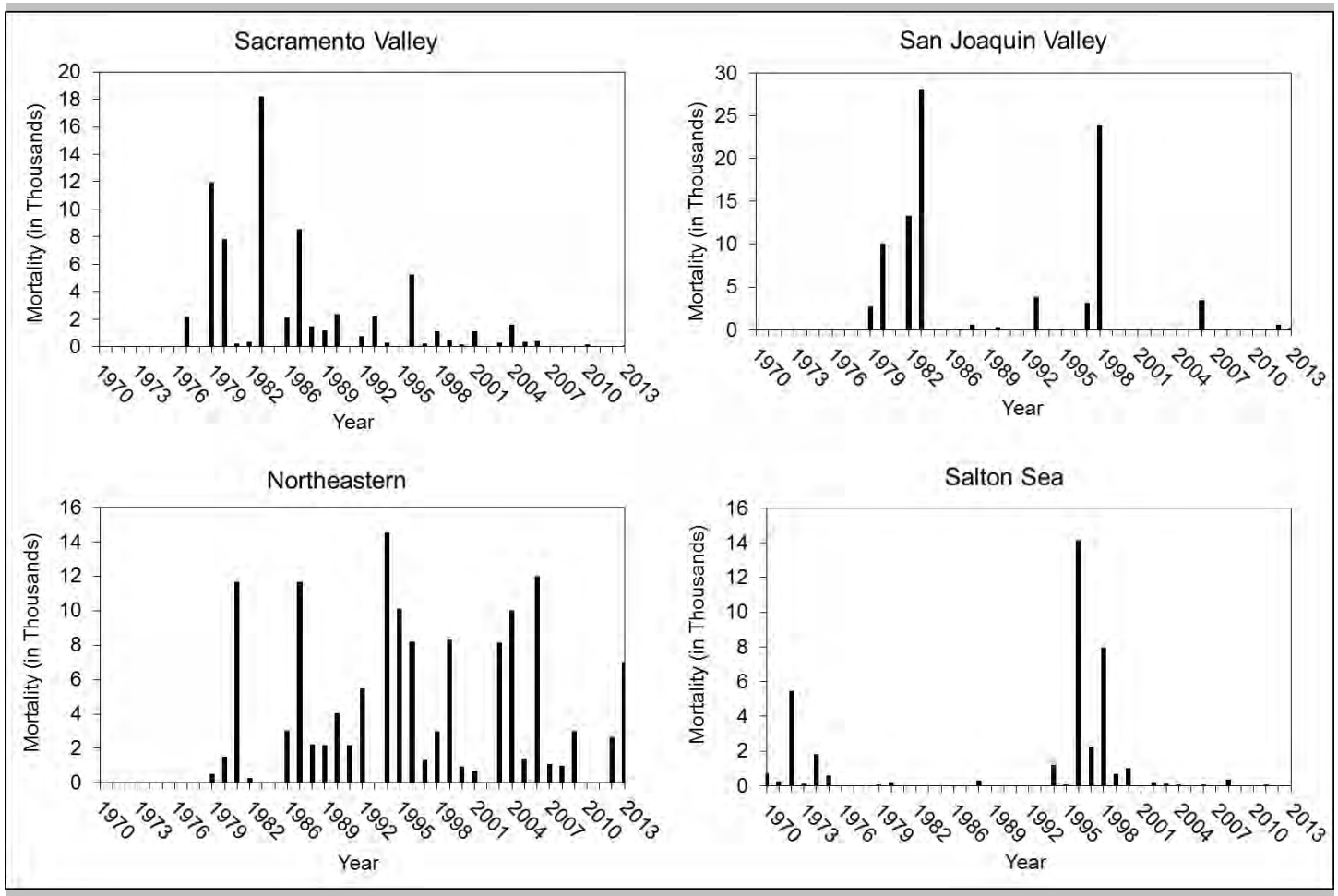
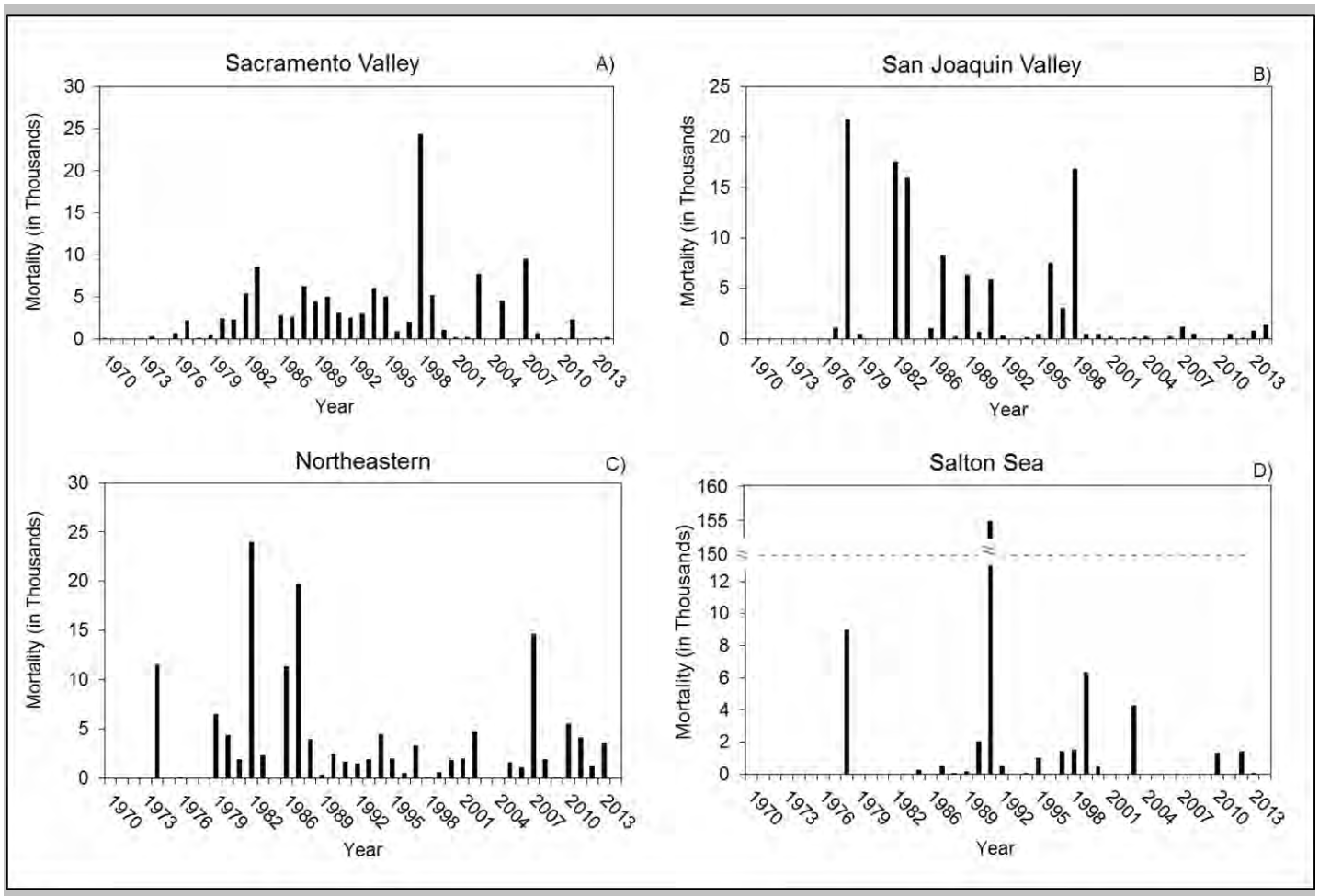


Figure 5. Waterfowl mortality from botulism by area, California 1970-2014



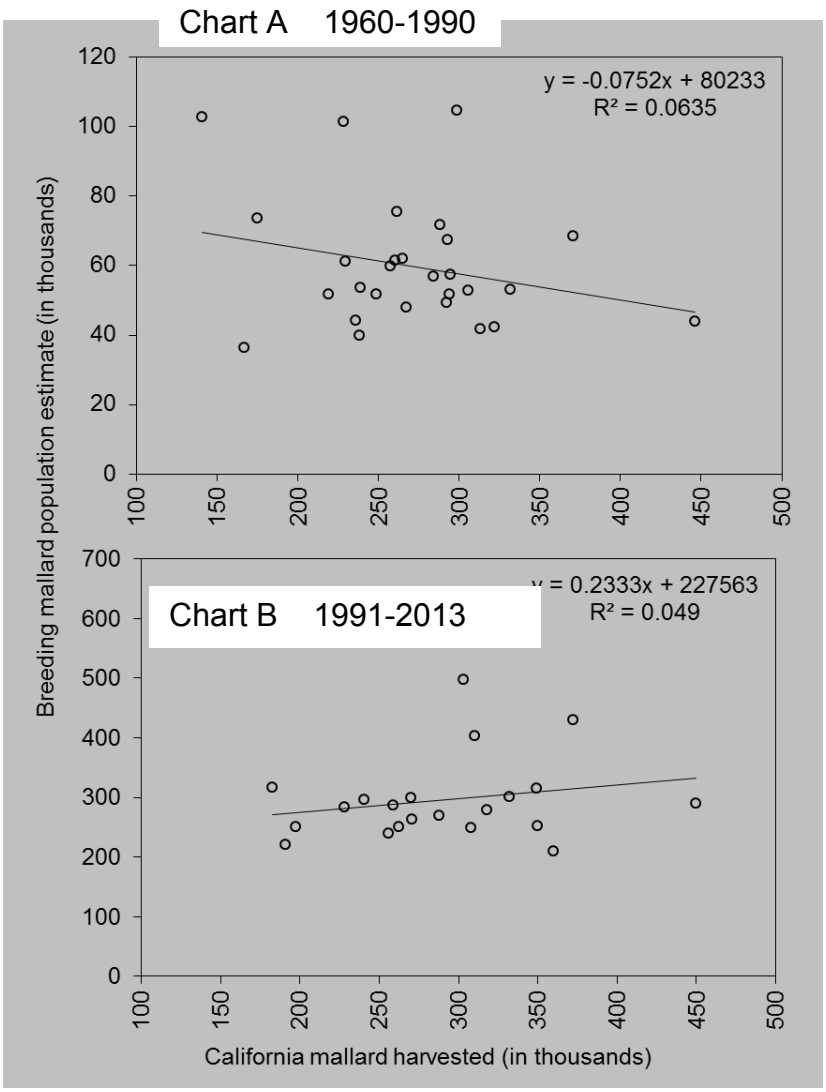
[1]All waterfowl species combined.
[2]Mortality represent total number reported to the USGS Wildlife Health Center.
[3]No data collected during 1985 due to federal government shutdown.

Figure 6. Waterfowl mortality from avian cholera by area, California 1970-2014.



[1]All waterfowl species combined.
[2]Mortality represent total number reported to the USGS Wildlife Health Center.
[3]No data collected during 1985 due to federal government shutdown.

Figure 7. California breeding mallard populations estimates vs hunt harvest



CUMMULATIVE IMPACTS

Short-term uses and Long-term Productivity

The 2006 analysis was presented on page 97 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The proposed project and existing hunting regulations will result in the temporary reduction of waterfowl, coot and moorhen populations and the use of nonrenewable fuels by hunters and the Department in the assessment of migratory game bird populations and the enforcement of the regulations. On the other hand, the Service concluded (USDI 1975:215) that the issuance of annual hunting regulations contributes significantly to the long-term productivity of the migratory game bird resource and their habitats, because hunting is allowed for only a few species of migratory birds for a limited period of time, and the revenues from hunting are important in the acquisition and management of migratory game bird habitats. Therefore, the project and existing regulations actually enhances long-term productivity of migratory game birds and results in no significant adverse impact on long-term productivity.

Growth Inducing Impacts

The 2006 analysis was presented on page 98 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). Because the hunting of migratory game birds is undertaken for a limited period of time and generally occurs in sparsely populated regions of the State, it is not likely to add to the growth in population in California or result in large-scale developments in any particular city or area. Overall numbers of migratory game bird hunters are declining, and because these numbers are declining, there is not likely to be an additional demand for housing in the specific areas in which hunting will occur. Therefore, the project and existing hunting regulations will not result in significant adverse impacts through growth.

Significant Irreversible Environmental Changes

The 2006 analysis was presented on page 98 (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115, available at 1812 9th Street, Sacramento 95811). The proposed project and existing hunting regulations would result in the continued commitment of energy resources by biologists and wardens in data collection, regulation promulgation, and law enforcement, and by hunters traveling to hunting areas. Therefore, the project will not result in significant adverse environmental impacts through irreversible changes.

The 2006 analyses and document referenced (incorporated by reference, August 2006 Final Environmental Document, SCH#2006042115) is located and available upon request from California Department of Fish and Game, Wildlife Branch, 1812 9th Street, Sacramento, CA 95811.

CHAPTER 3 – ALTERNATIVES

The three California project alternatives evaluated herein are: (1) no project – no change from the 2014-15 hunting regulations; (2) reduced season lengths and bag limits; and (3) elimination of all mechanical decoys.

Alternative 1. No project – no change from the 2014-15 hunting regulations

This alternative provides identical season and bag limit regulations as the 2014-15 seasons. Under this alternative, an increase in the brant season length would not occur.

Advantages of This Alternative

Waterfowl regulations are inherently complicated and any changes may result in confusion for some members of the public. Maintaining the 2014-15 regulations for the 2015-16 season may result in less confusion to some members of the public.

Disadvantages of This Alternative

The no change alternative provides less hunting opportunity compared to the proposed project because an increase of the brant season length would not be allowed. In addition, the no change alternative may not be current with yet to be established federal frameworks for the 2015-16 season.

Conclusion Regarding Alternative 1

It is unlikely that significant irreversible impacts would occur immediately or statewide as a result of selecting the no change alternative. However, this alternative was not recommended and may conflict with Federal frameworks.

Alternative 2. Reduced Season Lengths, Season Timing and Bag Limits

This alternative provides a suite of restrictions that when taken alone or in combination are expected to reduce harvests. This alternative could be selected by the Commission based on changes in Federal frameworks or a conclusion by the Commission that reduced harvests are a better alternative than the project or existing regulations. Under this alterative, for a generalized analysis, the length of each migratory bird season could be reduced by about 50 percent. For ducks, more conservative Adaptive Harvest Management regulatory alternatives (86 or 60 days) could be used. For brant, the 30-day season would be reduced to 15 days and for most other geese the season would be reduced from either 107 or 100 days to 51 days.

The AHM alternatives for the Pacific Flyway include total duck bag limits that range from 4 to 7 with differing restrictions on mallards and hen mallards. Other bag limit reductions considered in this alternative include a reduction from as many as 10 to as few as 3 geese depending on zone; a reduction in brant from two to one; and a reduction in the coot limit from 25 to 12 birds per day. Additionally, species-specific regulations, for pintail, redheads, canvasback or scaup could be further reduced under this alternative.

Advantages of This Alternative

Selection of Alternative 2, reduced season lengths, timing and bag limits, would reduce total harvest, although the magnitude of this reduction is not precisely predictable. This alternative has advantages only if the levels of harvest are suppressing populations. In 2013-14, the estimated retrieved harvest in California was 1,062,360 ducks, 162,150 geese and 13,200 coots. If harvest regulation restrictions cause a larger than expected decline in hunter participation, harvests might be reduced by more than 50 percent. If, as experienced in the 1989-90 season, there is a drop in hunter participation but fall flights are larger or contain higher percentages of juveniles than are expected, harvests would probably not decline by 50 percent. If harvests declined by exactly 50 percent; approximately 531,180 ducks, 81,075 geese, and 6,600 coots would not be harvested in California. If waterfowl, coots and moorhens have access to habitat of sufficient quality and quantity and these populations are being suppressed due to the levels of harvest previously experienced, populations might increase in following years as a result of the selection of this alternative. This alternative would provide recreational opportunity for hunters and meet one of the goals of the Conservation of Wildlife Resources Policy (Fish and Game Code, Section 1801), which is to include hunting as part of maintaining diversified recreational uses of wildlife.

Non-consumptive opportunities to view migratory birds would not differ substantially from the proposed project, because while this would increase non-conflicting viewing days on hunting areas, these areas are a small percent of

total waterfowl habitat. Reduction in possible conflicts between non-consumptive and consumptive users would be a likely result of this alternative.

Disadvantages of This Alternative

Harvest restrictions for waterfowl, coots and moorhens would probably be a disincentive for many of those private landowners who provide habitat through flooding of seasonal wetlands and agricultural lands during the fall and winter. These habitats form the majority of available wintering habitat for waterfowl and wetland dependent wildlife in California *(*Heitmeyer et al. 1989*)*. Habitat provided only during the hunting season would be available for a shorter time. For many of these private landowners, the short period of time allowed for hunting may be judged to be not worth the high costs associated with providing water and managing this habitat. This would reduce the amount of habitat available for waterfowl and other wetland dependent wildlife. Overcrowding, and as a result, reduced food resources and increased losses to diseases, would be expected.

Conclusion Regarding Alternative 2

Selection of this alternative might lead to a greater decline in participation by hunters. The reductions in the number of days that waterfowl, coots and moorhens could be hunted might not be deemed to be worth the costs of licenses, stamps, travel, and entry fees. A change in season timing is not likely to significantly affect the number of active hunters. A reduction in hunter participation would result in reduced revenues to the Department and the Service which are used to acquire, manage, and maintain vital habitats. If the reduced season length resulted in a lower hunting harvest and hunting mortality was additive to natural mortality, an increase in some populations of waterfowl would be possible. However, the Department concludes that this alternative alone would not result in a significant increase in waterfowl numbers in future years.

Alternative 3. Elimination of all mechanically- and artificially-powered spinning wing decoys as a method of take.

The use of mechanical or electronic duck decoys (also known as spinning wing decoys (SWDs), “rotoducks”, “motoducks”, motion wing decoys, etc.) may lead to increases in harvest beyond those anticipated by existing bag limits and season length. Some hunters and other members of the public are opposed to the use of these devices because they believe that the devices exceed the bounds of “fair chase” and eliminate the emphasis on traditional hunting skills needed to successfully hunt ducks, and the advantages detract from the experience and dedication needed to sustain the hunting tradition.

This alternative would eliminate the use of all mechanical and artificially powered spinning wing decoys as a method of take. The Department analyzed several

sources of information relative to the possible effects of spinning wing decoys and these analyses are provided in Appendix D.

Advantages of This Alternative

The evidence seems clear that spinning blade and spinning wing decoys increase harvest at the individual hunt level, and level of observed increases in harvest at the individual hunt level are not reflected in overall estimates of harvest (Appendix E). However, the role of harvest in duck population dynamics is not clearly understood and the effect of reducing harvest success at the individual hunt level may or may not result in observable changes in population parameters. Some members of the hunting public have expressed concerns that continual advances in technology ultimately detract from the traditional hunting experience and potentially may lead to a reduction in the support for waterfowl hunting. This is thought to be due to hunters becoming less dedicated to developing skills and investing in the activity to a level that generates support for conservation and potentially increasing the negative view of hunting by those that are currently not opposed to hunting. As technology continues to improve, debates such as the one over spinning blade and spinning wing devices would continue. A new debate over each new technological advance would seem likely. Resources would continually be re-directed to assess each new technological advance.

Disadvantages of This Alternative

As detailed in Appendix D, existing analyses do not clearly establish an effect of harvest on duck population dynamics. To some unmeasured extent, the use of SWD may influence more hunters to join or remain in hunting, thereby providing support for wetland and waterfowl conservation. Commercial enterprises that develop and market these devices would likely be opposed to their regulation. There is no information regarding other duck attracting devices currently in use and there is no basis to conclude that these devices increase duck harvest. Commercial enterprises exist or may be developed to increase technological improvements for attracting ducks.

Conclusions Regarding Alternative 3

The selection of this alternative would not result in a significant adverse environmental impact. As reported in Appendix D, to date, the Department is unable to scientifically associate observed changes in duck population status, except perhaps for certain cohorts of local mallards, with the use of SWDs. The selection of this alternative would be viewed favorably by those hunters and other members of the public who are opposed to the use of non-traditional methods, but would be viewed unfavorably by those hunters who are not opposed to their use. Those commercial enterprises that develop and market these devices would likely be opposed to their regulation.

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Appendix A. 2014-15 Regulations Related to Migratory Waterfowl, Coot, Moorhen, (Common Gallinule).

§502. Waterfowl, Migratory; American Coot and Common Moorhen (Common Gallinule).

(a) Definitions.
(1) Dark geese. Dark geese include Canada geese, cackling geese, Aleutian geese and white-fronted geese ("specklebelly").
(2) Large Canada geese. Large Canada geese include western Canada geese ("honker") and lesser Canada geese ("lessers").
(3) Small Canada geese. Small (about the size of a mallard) Canada geese include cackling geese and Aleutian geese. Both are white-cheeked geese nearly identical in appearance to Large Canada geese. Aleutian geese have a thin white neck ring and Cackling geese have dark breasts. Both species have a high-pitched cackle as opposed to the deeper "honking".
(4) White geese. White geese include Ross' geese, snow geese and blue phase of both species.
(b) Waterfowl Hunting Zones.
(1) Northeastern California Zone: In that portion of California lying east and north of a line beginning at the intersection of Interstate 5 with the California-Oregon state line; south along Interstate 5 to its junction with Walters Lane south of the town of Yreka; west along Walters Lane to its junction with Easy Street; south along Easy Street to the junction with Old Highway 99; south along Old Highway 99 to the point of intersection with Interstate 5 north of the town of Weed; south along Interstate 5 to its junction with Highway 89; east and south along Highway 89 to Main Street in Greenville; north and east to its junction with North Valley Road; south to its junction of Diamond Mountain Road; north and east to its junction with North Arm Road; south and west to the junction of North Valley Road; south to the junction with Arlington Road (A22); west to the junction of Highway 89; south and west to the junction of Highway 70; east on Highway 70 to Highway 395; south and east on Highway 395 to the point of intersection with the California-Nevada state line; north along the California-Nevada state line to the junction of the California-Nevada-Oregon state lines west along the California-Oregon state line to the point of origin.
(2) Southern San Joaquin Valley Zone: All of Kings and Tulare counties and that portion of Kern County north of the Southern California Zone.
(3) Southern California Zone: In that portion of southern California (but excluding the Colorado River zone) lying south and east of a line beginning at the mouth of the Santa Maria River at the Pacific Ocean; east along the Santa Maria River to where it crosses Highway 166 near the City of Santa Maria; east on Highway 166 to the junction with Highway 99; south on Highway 99 to the crest of the Tehachapi Mountains at Tejon Pass; east and north along the crest of the Tehachapi Mountains to where it intersects Highway 178 at Walker Pass; east on Highway 178 to the junction of Highway 395 at the town of Inyokern; south on Highway 395 to the junction of Highway 58; east on Highway 58 to the junction of Interstate 15; east on Interstate 15 to the junction with

Highway 127; north on Highway 127 to the point of intersection with the California-Nevada state line.
(4) Colorado River Zone: In those portions of San Bernardino, Riverside, and Imperial counties lying east of the following lines: Beginning at the intersection of Highway 95 with the California-Nevada state line; south along Highway 95 to Vidal Junction; south through the town of Rice to the San Bernardino-Riverside county line on a road known as “Aqueduct Road” in San Bernardino County; south from the San Bernardino-Riverside county line on road known in Riverside County as the “Desert Center to Rice Road” to the town of Desert Center; east 31 miles on Interstate 10 to its intersection with the Wiley Well Road; south on this road to Wiley Well; southeast along the Army-Milpitas Road to the Blythe, Brawley, Davis Lake intersections; south on the Blythe-Brawley paved road to its intersection with the Ogilby and Tumco Mine Road; south on this road to Highway 80; east seven miles on Highway 80 to its intersection with the Andrade-Algodones Road; south on this paved road to the intersection of the Mexican boundary line at Algodones, Mexico.
(5) Balance of State Zone: That portion of the state not included in Northeastern California, Southern California, Colorado River or the Southern San Joaquin Valley zones.
(6) Special Management Areas
(A) North Coast. All of Del Norte and Humboldt counties.
(B) Humboldt Bay South Spit (West Side). Beginning at the intersection of the north boundary of Table Bluff County Park and the South Jetty Road; north along the South Jetty Road to the South Jetty; west along the South Jetty to the mean low water line of the Pacific Ocean; south along the mean low water line to its intersection with the north boundary of the Table Bluff County Park; east along the north boundary of the Table Bluff County Park to the point of origin.
(C) Sacramento Valley. Beginning at the town of Willows; south on Interstate 5 to the junction with Hahn Road; east on Hahn Road and the Grimes-Arbuckle Road to the town of Grimes; north on Highway 45 to its junction with Highway 162; north on Highway 45-162 to the town of Glenn; west on Highway 162 to the point of beginning.
(D) Morro Bay. Beginning at a point where the high tide line intersects the State Park boundary west of Cuesta by the Sea; northeasterly to a point 200 yards offshore of the high tide line at the end of Mitchell Drive in Baywood Park; northeasterly to a point 200 yards offshore of the high tide line west of the Morro Bay State Park Boundary, adjacent to Baywood Park; north to a point 300 yards south of the high tide line at the end of White Point; north along a line 400 yards offshore of the south boundary of the Morro Bay City limit to a point adjacent to Fairbanks Point; northwesterly to the high tide line on the sand spit; southerly along the high tide line of the sand spit to the south end of Morro Bay; easterly along the Park boundary at the high tide line to the beginning point.
(E) Martis Creek Lake. The waters and shoreline of Martis Creek Lake, Placer and Nevada counties.
(F) Northern Brant. Del Norte, Humboldt and Mendocino counties.
(G) Balance of State Brant. That portion of the state not included in the Northern Brant Special Management Area.

(H) Imperial County. Beginning at Highway 86 and the Navy Test Base Road; south on Highway 86 to the town of Westmoreland; continue through the town of Westmoreland to Route S26; east on Route S26 to Highway 115; north on Highway 115 to Weist Rd.; north on Weist Rd. to Flowing Wells Rd.; northeast on Flowing Wells Rd. to the Coachella Canal; northwest on the Coachella Canal to Drop 18; a straight line from Drop 18 to Frink Rd.; south on Frink Rd. to Highway 111; north on Highway 111 to Niland Marina Rd.; southwest on Niland Marina Rd. to the old Imperial County boat ramp and the water line of the Salton Sea; from the water line of the Salton Sea, a straight line across the Salton Sea to the Salinity Control Research Facility and the Navy Test Base Road; southwest on the Navy Test Base Road to the point of beginning.

(c) Seasons and Bag and Possession Limits for American Coots, and Common Moorhens.		
(1) Statewide Provisions		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
American Coot and Common Moorhen	Concurrent with duck season(s)	Daily bag limit: 25, either all of one species or a mixture of these species. Possession limit: triple the daily bag limit
(d) Seasons and Bag and Possession Limits for Ducks and Geese by Zone.		
(1) Northeastern California Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	From the first Saturday in October extending for 105 days. **(Oct 4 – Jan 16)** Scaup: from the first Saturday in October extending for a period of 58 days **(Oct 4 – Nov 30)** and from the third Saturday in December extending for a period of 28 days. **(Dec 20 – Jan 16)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females. • 2 pintail (either sex). • 1 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.

Geese	Regular Season: Dark geese from the first Saturday in October extending for 100 days. **(Oct 4 – Jan 11)** White geese from the last Friday in October extending for 73 days. **(Oct 31 – Jan 11)** Late Season: White-fronted geese from the first Friday in March extending for 5 days. **(Mar 6 – Mar 10)** White geese from the first Saturday in February extending for 32 days. **(Feb 7 – Mar 10)** During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016, Fish and Game Code.	Daily bag limit: 25 Daily bag limit may include: • 15 white geese. • 10 dark geese but not more than 2 Large Canada geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(2) Southern San Joaquin Valley Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	From the third Saturday in October extending for 100 days. **(Oct 18 – Jan 25)** Scaup: from the first Saturday in November extending for 86 days. **(Nov 1 – Jan 25)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females. • 2 pintail (either sex). • 1 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	From the third Saturday in October extending for 100 days. **(Oct 18 – Jan 25)**	Daily bag limit: 25 Daily bag limit may include: • 15 white geese. • 10 dark geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.
(3) Southern California Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR		

SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers)	From the third Saturday in October extending for 100 days. **(Oct 18 – Jan 25)** Scaup: from the first Saturday in November extending for 86 days. **(Nov 1 – Jan 25)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females. • 2 pintail (either sex). • 1 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	From the third Saturday in October extending for 100 days. **(Oct 18 – Jan 25)**	Daily bag limit: 18 Daily bag limit may include: • 15 white geese. • 3 dark geese (see definitions 502(a)). Possession limit: triple the daily bag limit.
(4) Colorado River Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers).	From the third Friday in October extending for 101 days. **(Oct 17 – Jan 25)** Scaup: from the first Saturday in November extending for 86 days. **(Nov 1 – Jan 25)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females or Mexican-like ducks. • 2 pintail (either sex). • 1 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	From the third Friday in October extending for 101 days. **(Oct 17 – Jan 25)**	Daily bag limit: 10 Daily bag limit may include: • 10 white geese. • 4 dark geese (see definitions: 502(a)).

		Possession limit: triple the daily bag limit.
(5) Balance of State Zone (NOTE: SEE SUBSECTION 502(d)(6) BELOW FOR SPECIAL SEASONS AND CLOSURES.)		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers).	From the third Saturday in October extending for 100 days. **(Oct 18 – Jan 25)** Scaup: from the first Saturday in November extending for 86 days. **(Nov 1 – Jan 25)**	Daily bag limit: 7 Daily bag limit may include: • 7 mallards, but not more than 2 females. • 2 pintail (either sex). • 1 canvasback (either sex). • 2 redheads (either sex). • 3 scaup (either sex). Possession limit: triple the daily bag limit.
Geese	Early Season: Large Canada geese only from the Saturday closest to October 1 for a period of 5 days EXCEPT in the North Coast Special Management Area where Large Canada geese are closed during the early season. **(Oct 4 – Oct 8)** Regular Season: Dark and white geese from the third Saturday in October extending for 100 days **(Oct 18 – Jan 25)** EXCEPT in the Sacramento Valley Special Management Area where the white-fronted goose season will close after December 21. **(Oct 18 – Dec 21)** Late Season: White-fronted geese and white geese from the second Saturday in February extending for a period of 5 days EXCEPT in the Sacramento Valley	Daily bag limit: 25 Daily bag limit may include: • 15 white geese. • 10 dark geese EXCEPT in the Sacramento Valley Special Management Area where only 3 may be white-fronted geese (see definitions: 502(a)). Possession limit: triple the daily bag limit.

	Special Management Area where the white-fronted goose season is closed. During the Late Season, hunting is not permitted on wildlife areas listed in Sections 550-552 EXCEPT on Type C wildlife areas in the North Central and Central regions. **(Feb 14 – Feb 18)**		

(6) Special Management Areas (see descriptions in 502(b)(6))				
	(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*	
1. North Coast	All Canada Geese	From the last Friday in October extending for a period of 87 days **(Oct 31 – Jan 25)** (Regular Season) and from the third Saturday in February extending for a period of 18 days **(Feb 21 – Mar 10)**(Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions Section 2016, Fish and Game Code.	Daily bag limit: 10 Canada Geese of which only 1 may be a Large Canada goose (see definitions: 502(a)), EXCEPT during the Late Season the bag limit on Large Canada geese is zero. Possession limit: triple the daily bag limit.	
2. Humboldt Bay South Spit (West Side)	All Species	Closed during brant season.		
3. Sacramento Valley	White-Fronted Geese	Open concurrently with the goose season through December 21, and during Youth Waterfowl Hunting Days. **(Oct 18 – Dec 21)**	Daily bag limit: 3 white-fronted geese. Possession limit: triple the daily bag limit.	
4. Morro Bay	All species	Open in designated area only from the opening day of brant season through the remainder of waterfowl season.		

5. Martis Creek Lake	All species	Closed until November 16.		
6. Northern Brant	Black Brant	From November 7 extending for 30 days. **(Nov 7 – Dec 6)**	Daily bag limit: 2 Possession limit: triple the daily bag limit.	
(7) Balance of State Brant	Black Brant	From the second Saturday in November extending for 30 days. **(Nov 8 – Dec 7)**	Daily bag limit: 2 Possession limit: triple the daily bag limit.	
(8) Imperial County	White Geese	From the first Saturday in November extending for a period of 86 days **(Nov 1 – Jan 25)**(Regular Season) and from the first Saturday in February extending for a period of 16 days **(Feb 7 – Feb 22)**(Late Season). During the Late Season, hunting is only permitted on private lands with the permission of the land owner under provisions of Section 2016, Fish and Game Code.	Daily bag limit: 15 Possession limit: triple the daily bag limit.	

(e) Youth Waterfowl Hunting Days Regulations (NOTE: To participate in these Youth Waterfowl Hunts, federal regulations require that hunters must be 15 years of age or younger and must be accompanied by a non-hunting adult 18 years of age or older.)

(1) Statewide Provisions.

(A) Species	*(B) Season*	*(C) Daily Bag Limit*
Ducks (including Mergansers), American Coot, Common Moorhen, Black Brant, Geese	1. Northeastern California Zone: The Saturday fourteen days before the opening of waterfowl season extending for 2 days. **(Sept 20 – 21)** 2. Southern San Joaquin Valley Zone: The Saturday following the closing of waterfowl season extending for 2 days. **(Jan 31 – Feb 1)**	Same as regular season.

	3. Southern California Zone: The Saturday following the closing of waterfowl season extending for 2 days. **(Jan 31 – Feb 1)** 4. Colorado River Zone: The Saturday following the closing of waterfowl season extending for 2 days. **(Jan 31 – Feb 1)** 5. Balance of State Zone: The Saturday following the closing of waterfowl season extending for 2 days. **(Jan 31 – Feb 1)**	
(f) Falconry Take of Ducks (including Mergansers), Geese, American Coots, and Common Moorhens.		
(1) Statewide Provisions		
(A) Species	*(B) Season*	*(C) Daily Bag and Possession Limits*
Ducks (including Mergansers), Geese, American Coot and Common Moorhen	1. Northeastern California Zone. Open concurrently with duck season. **(Oct 4 – Jan 18)** 2. Balance of State Zone. Open concurrently with duck season and January 31-February 1, 2015, EXCEPT in the North Coast Special Management Area where the falconry season for geese runs concurrently with the season for Small Canada geese (see 502(d)(6)). **(Oct 18 – Jan 25 & Jan 31 – Feb 1)** 3. Southern San Joaquin Valley Zone. Open concurrently with duck season and January 31-February 1, 2015. Goose hunting in this zone by means of falconry is not permitted. **(Oct 18 – Jan 25 & Jan 31 – Feb 1)** 4. Southern California Zone. Open concurrently with duck season and January 26-30, 2015 EXCEPT in the	Daily bag limit: 3 Daily bag limit makeup: • Either all of 1 species or a mixture of species allowed for take. Possession limit: 9

	Imperial County Special Management Area where the falconry season for geese runs concurrently with the season for white geese. **(Oct 18 – Jan 30)** 5. Colorado River Zone. Open concurrently with duck season and January 26-29, 2015. Goose hunting in this zone by means of falconry is not permitted. Federal regulations require that California's hunting regulations conform to those of Arizona, where goose hunting by means of falconry is not permitted. **(Oct 17 – Jan 29)**	

Note: Authority cited: Sections 202 and 355, Fish and Game Code. Reference: Sections 202, 355 and 356, Fish and Game Code.

Appendix B. Estimated Retrieved Harvest of Geese in California

Year	Canada	White-Front	Snow	Ross'	Brant	TOTAL
1962	53,532	50,088	28,826	0	9,433	141,879
1963	99,888	56,694	66,810	0	8,008	231,400
1964	77,920	51,735	55,151	0	3,748	188,554
1965	49,685	42,211	33,771	0	10,735	136,402
1966	72,415	65,321	155,543	1,022	7,155	301,456
1967	8,756	62,819	72,413	533	6,929	151,450
1968	72,935	47,345	53,308	0	8,298	181,886
1969	72,613	68,443	72,545	2,514	10,056	226,171
1970	95,112	70,639	112,614	5,114	393	283,872
1971	74,008	34,216	94,123	3,646	2,524	208,517
1972	148,888	51,813	41,998	0	13,698	256,397
1973	69,701	44,615	106,721	4,398	2,161	227,596
1974	72,166	40,682	50,764	8,464	1,693	173,769
1975	62,002	30,193	81,993	6,968	0	181,156
1976	58,444	44,044	127,678	7,726	515	238,407
1977	42,610	33,572	77,771	3,395	9,700	167,048
1978	46,530	34,719	28,578	2,360	674	112,861
1979	31,373	21,399	26,179	4,419	0	83,370
1980	26,950	18,693	28,459	2,795	0	76,897
1981	52,089	21,781	28,591	6,316	0	108,777
1982	46,418	15,004	26,263	7,298	0	94,983
1983	56,384	16,157	43,223	6,789	3,573	126,126
1984	38,004	6,686	49,609	8,373	0	102,672
1985	40,313	15,157	65,085	8,913	0	129,468
1986	21,999	7,542	31,839	3,477	0	64,857
1987	1,348	9,634	28,601	2,375	0	41,958
1988	26,296	4,707	30,571	884	0	62,458
1989	24,486	9,519	30,263	5,106	566	69,940
1990	32,691	7,003	8,104	2,438	475	50,711
1991	9,474	9,828	25,839	3,253	211	48,605
1992	28,546	11,705	26,407	3,076	1,810	71,544
1993	21,066	12,311	46,461	7,430	2,368	89,636
1994	28,469	12,597	21,847	7,476	2,774	73,163
1995	21,119	11,476	30,679	4,833	328	68,435
1996	25,487	16,530	46,849	12,405	2,639	103,910
1997	23,659	22,448	27,628	8,058	4,029	85,822
1998	23,299	21,984	38,371	6,049	12,097	101,800
1999	14,017	23,925	35,563	23,545	2,639	99,689
2000	25,877	21,184	31,721	6,749	1,800	87,331
2001	30,228	27,080	33,167	13,015	4,100	107,590
2002	37,762	31,497	30,279	15,662	1,100	116,300
2003	41,946	24,685	32,851	16,333	2,300	118,115
2004	44,492	39,924	35,355	10,329	800	130,900
2005	49,182	42,156	46,653	7,729	900	146,620
2006	41,381	52,492	43,296	5,875	2,900	145,944
2007	50,484	59,416	52,038	7,961	1,800	171,699
2008	49,252	110,523	70,946	13,779	1,000	245,500
2009	53,865	56,101	30,693	8,740	900	150,299
2010	68,666	67,810	54,548	14,974	541	206,539
2011	51,870	55,760	43,718	14,635	750	166,733
2012	47,877	41,842	45,261	14,886	1,093	150,959
2013*	44,071	65,071	38,747	13,310	952	162,151
Averages:						
1962-2012	46,301	35,015	48,968	6,643	2,888	139,814
1962-65	70,256	50,182	46,140	0	7,981	174,559
1966-70	64,366	62,913	93,285	1,837	6,566	228,967
1971-75	85,353	40,304	75,120	4,695	4,015	209,487
1976-80	41,181	30,485	57,733	4,139	2,178	135,717
1981-85	46,642	14,957	42,554	7,538	715	112,405
1986-90	21,364	7,681	25,876	2,856	208	57,985
1991-95	21,735	11,583	30,247	5,214	1,498	70,277
1996-00	22,468	21,214	36,026	11,361	4,641	95,710
2001-05	40,722	33,068	35,661	12,614	1,840	123,905
2005-12	52,100	63,465	48,842	10,528	1,256	176,191
% Change from:						
2012	-7.9%	55.5%	-14.4%	-10.6%	-12.9%	7.4%
1962-2012	-4.8%	85.8%	-20.9%	100.4%	-67.0%	16.0%
% State's Total Goose Harvest:						
2013	19.5%	28.8%	17.1%	5.9%	0.4%	
1962-2012	33.1%	25.0%	35.0%	4.8%	2.1%	
*Preliminary Data						

Appendix C. 2014 Pacific Flyway Fall and Winter Goose Surveys

Fall	White-fronted Geese	Cackling Canada Geese				Snow/Ross' Geese		
		Oregon-Wash.*	Calif. & Elsewhere	Total	Total**	Skagit-Fraser	Calif. & Elsewhere	Total
1979	73,100	200	63,900	64,100		35,600	492,500	528,100
1980	93,500	200	127,200	127,400		22,400	181,800	204,200
1981	116,500	1,100	86,000	87,100		48,600	711,300	759,900
1982	91,700	0	54,100	54,100		26,100	328,000	354,100
1983	112,900	0	26,200	26,200		24,500	523,100	547,600
1984	100,200	4,000	21,800	25,800		26,600	439,700	466,300
1985	93,800	7,400	24,700	32,100	46,776	46,200	503,600	549,800
1986	107,100	12,000	39,400	51,400	45,232	39,900	481,800	521,700
1987	130,600	11,000	43,800	54,800	66,735	47,700	477,600	525,300
1988	161,500	19,100	50,800	69,900	81,964	43,800	397,200	441,000
1989	218,800	13,000	63,800	76,800	85,341	32,200	431,700	463,900
1990	240,800	34,700	75,500	110,200	106,393	31,700	676,800	708,500
1991	236,500	27,900	76,700	104,600	96,624	39,100	651,000	690,100
1992	230,900	60,700	88,600	149,300	148,593	34,300	605,000	639,300
1993	295,100	65,700	98,600	164,300	153,259	49,100	520,100	569,200
1994	324,800	75,900	76,600	152,500	217,820	42,600	435,600	478,200
1995	277,500	114,000	47,400	161,400	234,125	37,000	464,400	501,400
1996	344,100	123,600	11,000	134,600	249,823	45,800	320,500	366,300
1997	319,000	188,900	16,200	205,100	294,860	47,000	369,400	416,400
1998	413,100	139,000	9,600	148,600	216,413	47,100	307,200	354,300
1999	393,400	--	--	--	241,780	28,600	550,400	579,000
2000	352,700	--	--	--	251,223	56,300	600,500	656,800
2001	438,900	--	--	--	253,327	52,000	396,200	448,200
2002	359,700	--	--	--	168,126	73,100	523,700	596,800
2003	422,000	--	--	--	234,054	66,800	521,000	587,800
2004	374,900	--	--	--	172,157	68,141	682,128	750,269
2005	443,900	--	--	--	219,371	80,040	630,686	710,726
2006	509,262	--	--	--	241,150	79,891	719,810	799,701
2007	604,706	--	--	--	248,409	94,859	978,622	1,073,481
2008	627,035	--	--	--	283,641	57,000	900,403	957,403
2009	536,746	--	--	--	225,904	73,964	827,055	901,019
2010	649,840	--	--	--	275,343	63,641	800,156	863,797
2011	604,270	--	--	--	180,227	69,964	1,027,887	1,097,851
2012	664,201	--	--	--	202,323	56,973	824,432	881,405
2013	579,902	--	--	--	312,220	75,313	1,275,890	1,351,203
2014	637,221	--	--	--	281,300	***	***	
Most recent 3-yr average:	627,108				265,281	67,417	1,042,736	1,110,153
Population objective:	300,000			250,000		>35,000		
Stop hunting if below 3-yr avg. threshold of:	95,000			80,000				
Resume hunting if above 3-yr avg. threshold of:	120,000			110,000				

*Lower Columbia River, Willamette Valley, and Summer Lake, only.

**Population indices are based new methodology, adopted in 2011, and equal (Total Indicated Birds)*3.35, which is the ratio of fall estimates based on observations of neck-banded birds and spring Yukon-Kuskokwim Delta breeding estimates.

***Survey to be conducted in Fall.

Appendix D. Possible Effects of Spinning Wing Decoys in California

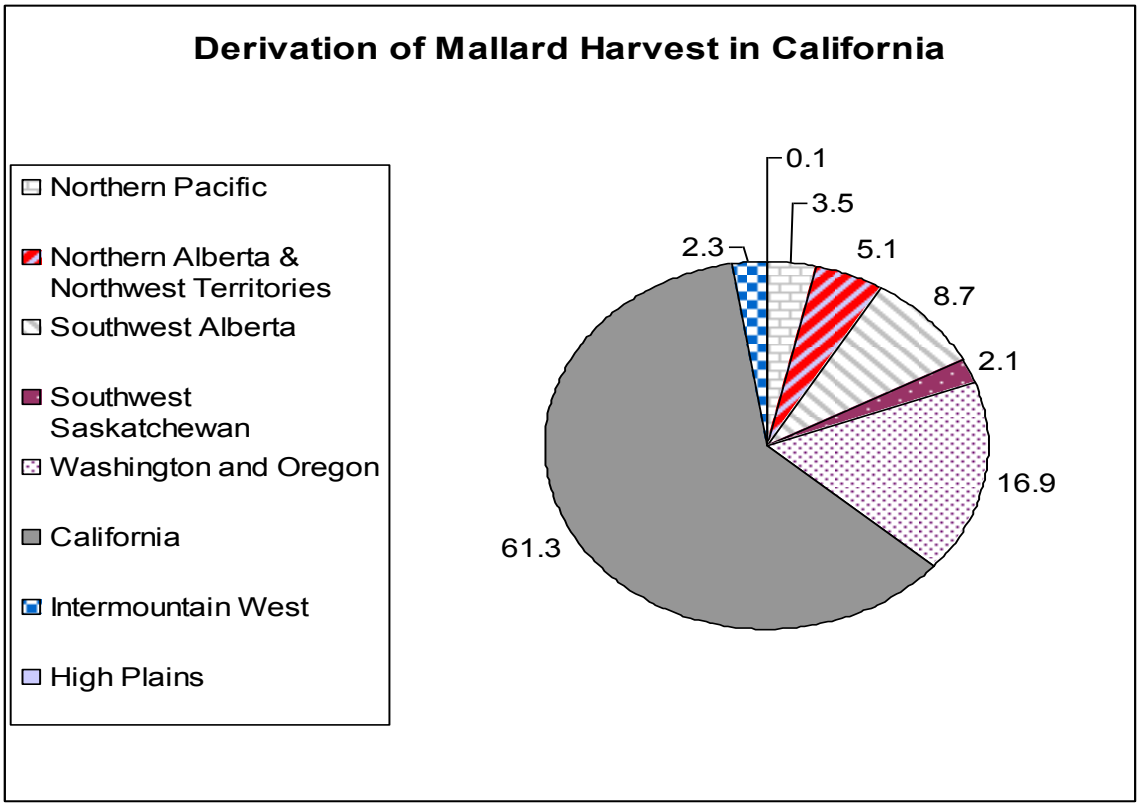
Introduction

The use of mechanical or electronic duck decoys (also known as spinning wing decoys (SWDs), “rotoducks”, “motoducks”, motion wing decoys, etc.) may lead to increases in harvest beyond those anticipated by existing bag limits and season length. Some hunters and other members of the public are opposed to the use of these devices because they believe that the devices may lead to excessive harvest or exceed the bounds of “fair chase” and eliminate the emphasis on traditional hunting methods.

The Department examined the results of studies, existing monitoring programs, and initiated additional analyses to assess the potential effects of SWDs on the harvest of ducks. Monitoring programs (i.e. estimates of breeding populations, total harvests) are not designed to measure the effectiveness of a single harvest method, such as a SWD.

These analyses mostly focus on mallards because mallards are the most abundant breeding duck in the State, are the most frequently occurring duck species in the harvest (Appendix E) and, unlike other species of ducks, are mostly derived from within California (62%; J. Dubovsky, USFWS, unpub data, Figure D-1).

Figure D-1. Derivation of Mallard Harvest in California.



Department Surveys on the Use and Effectiveness of SWDs

The widespread use of SWDs in California began in 1998. The Department compared the daily harvest of hunters on public hunting areas who said they used SWDs to those that said they did not during the 1999-00 to 2001-02 seasons.

Hunters were sampled on five public hunting areas (Delevan National Wildlife Refuge, Upper Butte Basin Wildlife Area, Grizzly Island Wildlife Area, Los Banos Wildlife Area, and Mendota Wildlife Area) on 10 randomly-selected dates during the 1999-00 hunting season and again on five areas (Sacramento National Wildlife Refuge, Upper Butte Basin Wildlife Area, Grizzly Island Wildlife Area, Los Banos Wildlife Area, and Mendota Wildlife Area) on 14 random days during the 2000-01 hunting season. During the 2001-02 hunting season, sampling occurred on 10 days picked at random on the Delevan National Wildlife Refuge, Upper Butte Basin Wildlife Area, Grizzly Island Wildlife Area, Los Banos Wildlife Area, and Mendota Wildlife Area.

The results from nearly 23,000 hunter-days from the three year survey are summarized in Table D-1. Use of SWDs generally increased in the second year of study, especially in the Sacramento Valley, but use declined on some areas during the third year of study on some areas. SWD use varied from 16 to 59 percent of hunters. There were no other differences between years. Total ducks harvested was significantly greater for hunters using SWDs on all five areas, and the overall average increase was about 1 bird per hunter.

Although the average number of mallards taken by hunters using mechanical duck decoys trended higher, harvest on only one of the five areas was higher at a statistically significant level in one year. The overall average increase in mallards bagged for hunters using SWDs was about 0.5 mallards per hunter-day.

Although average numbers of ducks taken by hunters using SWDs were higher than the averages by hunters that did not use the devices, and use of the devices was common, overall duck harvest on the public hunting areas in 1999 (201,000); 2000 (165,000); and 2001 (157,000); was lower than in 1998 and the overall ducks per hunter per day was essentially unchanged.

Effectiveness of December 1st Regulation

Beginning in 2001, the Commission adopted a prohibition on the use of electronic or mechanically operated spinning-wing decoys from the beginning of the waterfowl season until November 30th. Before and after the regulation change, a variety of changes have occurred with mallard harvest regulations (i.e. opening days, bag limits, season length). The Department analyzed public hunt results to see if any changes have occurred with mallard harvest in relation to the regulation change. Mallards were chosen for this analysis, since the December 1st regulation was created when the

Table D-1. Use and success of hunters using SWD on selected public hunting areas.

Area	Year	% Who Used Decoy	Total Duck Harvest	Percent Mallard	Avg Mallards per Hunter	Avg Ducks per Hunter	Sample Size	Total Annual Hunter Visits
Little Dry Creek	1999-00	52 - YES 48 - NO	2431 1610	36 34	1.4 1	3.9 2.8	1197	5030
	2000-01	59 - YES 41 - NO	2707 1006	47 51	1.4 0.8	2.9 1.6	1550	4650
	2001-02	52 - YES 47 - NO	2697 1553	42 47	1.86 1.32	4.42 2.79	1165	4188
Delevan	1999-00	52 - YES 48 - NO	1643 1177	17 18	0.5 0.4	2.6 2	1210	7061
	2000-01	not sampled						
	2001-02	45 - YES 54 - NO	1831 1251	30 30	1.09 0.6	3.55 2.02	1132	5941
Sacramento	1999-00	not sampled						
	2000-01	57 - YES 43 - NO	1271 904	24 32	0.5 0.6	1.8 1.7	1212	8656
	2001-02	not sampled						
Grizzly Island	1999-00	29 - YES 71 - NO	1129 1998	14 18	0.3 0.3	2 1.4	1978	8658
	2000-01	36 - YES 64 - NO	1508 1852	28 26	0.5 0.3	1.8 1.2	2305	7176
	2001-02	39 - YES 60 - NO	699 652	17 17	0.24 0.14	1.42 0.85	1250	5880
Los Banos	1999-00	24 - YES 76 - NO	416 786	31 28	0.6 0.3	1.8 1.1	981	4314
	2000-01	41 - YES 59 - NO	802 448	31 35	0.7 0.3	2.1 0.9	914	4698
	2001-02	34 - YES 65 - NO	454 502	16 23	0.32 0.26	2 1.17	654	4427
Mendota	1999-00	16 - YES 84 - NO	790 3179	16 13	0.4 0.2	2.4 1.8	2133	9886
	2000-01	24 - YES 76 - NO	1224 2716	29 20	0.6 0.3	2 1.3	2638	10196
	2001-02	28 - YES 71 - NO	1842 3056	12 12	0.33 0.22	2.59 1.71	2497	11132

breeding population of mallards in California was declining. Beginning in December, a larger percentage of migrant mallards start appearing in the harvest.

A mallard per hunter visit was calculated for all public hunt areas. Although waterfowl zones and other issues exist (e.g. delay due to rice harvest), these were controlled for by computing an average mallard take per hunter day on all areas before and after December 1st (including this date). Additionally, for analysis, data from 1992 – 2006 was partitioned into three categories: 1992-1997, 1998-2000, and 2001-2006). Use of SWDs began during the 1998-1999 hunting season in California, and continued without restriction until the December 1st restriction starting with the 2001-02 waterfowl hunting season, therefore we have a five year buffer (before and after restriction) on each side of their uncontrolled use on public hunting areas (Figure D-2).
Also Included are past years (2007 – 2013) average mallard take per day on public areas.

Based on statistical tests (ANOVAs), there was no difference in mallard harvest per hunter day during the three time periods after December 1st (P = 0.617). However, there were significant differences in hunter harvest per day among the three time periods before December 1st (P = .005). On average, the mallard harvest per hunter-day was 33% larger from 1998-2000 than 1992-1997 before December 1st. The mallard harvest per hunter day was 26% larger for the same period when compared to 2001-2006 seasons. Based on public hunt results, it appears that the December 1st restriction has significantly decreased the before December 1st harvest on mallards on public hunt areas (on a hunter-day basis).

<u>Studies and Scientific Literature on Spinning Wing Decoys (SWDs)</u>

University of California Davis Study

A more rigorous study during the 1999-00 hunting season by the University of California, Davis, also indicated an increase in harvest, particularly early in the season. In this study, hunters were observed during alternating 30 minute periods with SWDs in use and not in use. A total of 37 hunts were conducted. Overall, when hunters used a mechanical duck decoy, they shot about 2.5 times as many ducks as when they didn't use one. Early in the season, hunters using the device shot nearly 7 times more ducks than when the same hunters didn't use the device (Eadie *et al*. 2001). Summary information from this study is provided in the Figure D-3.

Arkansas Study

In Arkansas, as study was conducted during 2 years (2001-02 and 2002-03) to evaluate their effectiveness. Overall, 272 hunters killed 537 ducks during 101 hunts. Mallards comprised 57% of the harvest. Of ducks taken, 64 percent were harvested during periods when decoys were on and only 36 percent when off. Results of paired observations indicate that kill per hunter was 1.8 times greater with decoys on versus off. Similarly, 1.3 times as many flocks were seen per hunt, 1.8 times as many shots were fired per hunter and 1.2 times as many cripples were lost during periods when SWDs were on versus off. Age ratios of harvested mallards were similar with decoy

use (Imm./Adult ratio = 0.26 when ON and Imm./Adult ratio = 0.23 when OFF), however, adult mallards were 2 times more likely to be shot during periods with a robo" decoy on than off. Body mass was similar for mallards shot and retrieved during both treatments (ON and OFF) (M. Checkett, Arkansas Game & Fish Commission, unpub. data).

Figure D-2. Mallard harvest on the public hunting areas relative to December 1, 1992-2014 hunt seasons.

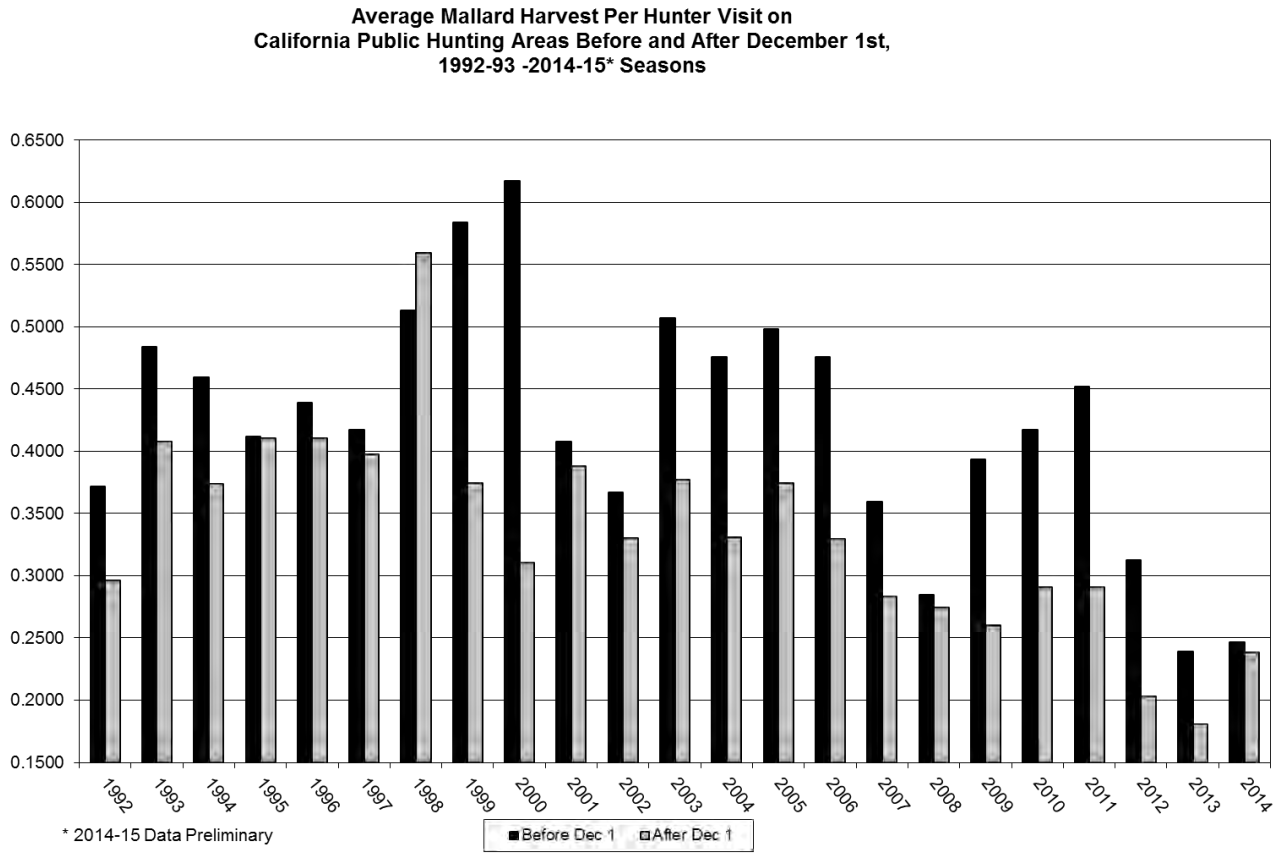
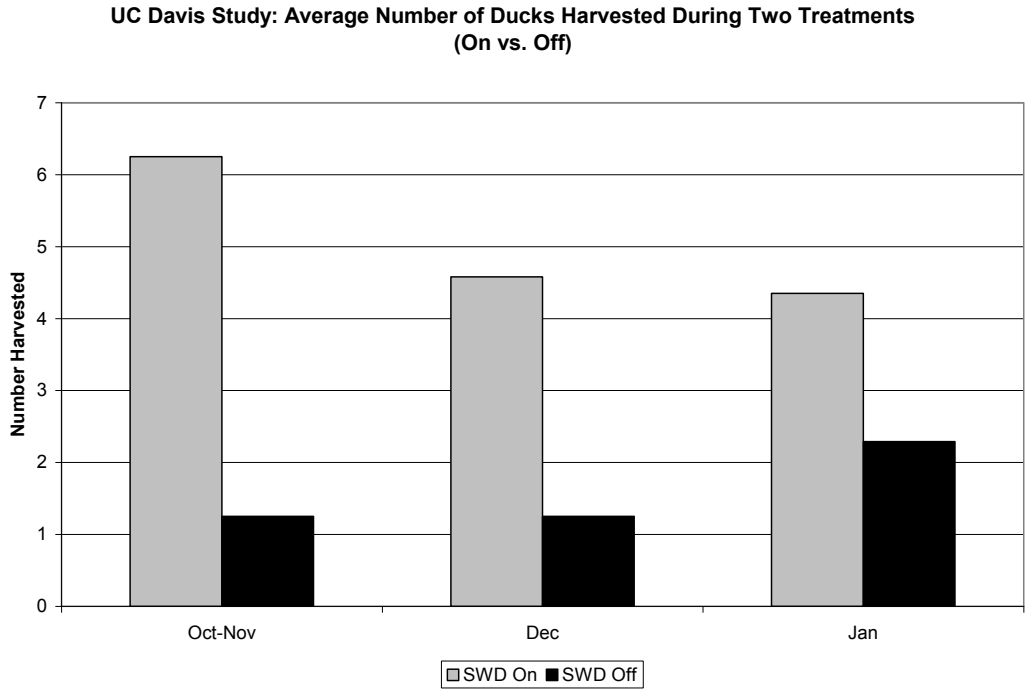


Figure D-3. Summary results from University of California, Davis Study



Manitoba, Canada, Study

In Manitoba, Canada, during the falls of 2001 and 2002, 99 experimental marsh and 55 experimental field hunts were conducted. Each hunt consisted of a series of equal and alternating 15-minute experimental (SWD on) and control (SWD off) periods, separated by a 3-minute buffer. Duration of total hunts ranged from 1.0 to 3.0 hours with an average of 1.4 ± 0.5 hours. Experimental marsh hunts indicated that mallards were 1.9 times more likely to fly within gun range, the kill rate was 5.0 times greater, size adjusted body mass of harvested mallards was greater, and the crippling rate was 1.6 times lower in experimental than control periods. Field hunts indicated that mallards were 6.3 times more likely to fly within gun range, kill rate was 33 times greater, and crippling rate was 2.2 times lower in experimental than control periods. A SWD activity*age interaction indicated that adult males harvested during experimental periods had higher size adjusted body mass than that of juveniles mallards harvested during experimental periods. However, body condition of harvested adult and juvenile mallards did not differ significantly during control periods (Caswell and Caswell 2004).

Minnesota study

In Minnesota, due to concerns about the potential increased harvest of local mallards, 219 experimental hunts with 367 volunteer hunters were conducted during 1,556 sampling periods (both ON and OFF treatments) during the 2002 waterfowl season. When using a SWD, mallards were 2.91 times more likely to respond to the decoy (within 40 m) as compared to when off. Flock size was larger when the decoy was on,

as compared to off. The number of mallards killed/hour/hunter was 4.71 times higher when the SWD was on. There was no difference in crippling loss in treatment types (ON vs. OFF). Age ratios of mallards were 1.89 (HY/AHY birds) versus 0.61 when ON and OFF, respectively. Overall, the study predicted an increase in mallard harvest, if SWDs became widely used in Minnesota (Szymanski and Afton 2004).

Missouri Study

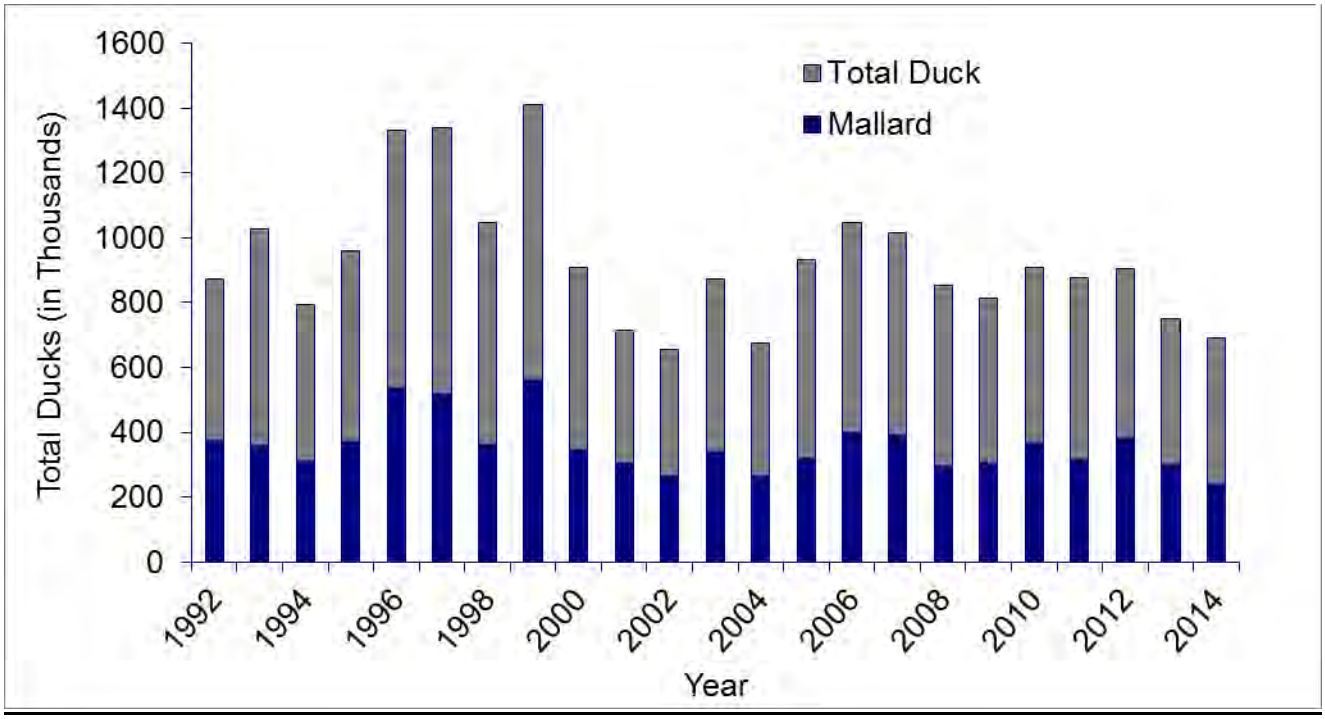
In Missouri, efforts to evaluate the use and attitudes regarding SWD were completed in 2000 and 2001. Hunters using SWDs shot and retrieved 1.28 more total ducks per hunting party (2-3 hunters) and 0.82 more male mallards than when not using a SWD. Missouri waterfowl hunters hunting on public areas were more successful in 2000 when using SWDs than hunters who did not use SWDs. The overall difference in success rate between users and non-users was 0.78 ducks per hunter trip; however, about half of this difference was attributed to factors other than SWDs, such as greater hunting skills. The remaining increase in hunting success, between 0.32 and 0.45 ducks/ hunter trip (13%-19% increase in success rate), was attributed to SWDs (A. Raedecke, Missouri Department of Conservation, unpub. data).

These brief summaries of the additional results and other studies (Nebraska) were summarized in Ackerman et al (2006). Overall, 70.2% of all ducks were harvested when the SWDs were used, as compared to 29.8% when the decoy was not in use. Significant results indicated that the probability of being shot increased with latitude (study location) and annual survival rates of species. These results support that fact that ducks may be more naïve at the beginning of migration (i.e. Manitoba), as compared to late in migration (i.e. Arkansas). Ackerman et al. (2006) suggested that these studies “only measured the effect of SWDs on kill rates of ducks and these rates will not necessarily translate into overall changes in population harvest rates.”

<u>California breeding populations</u>

The Department annually estimates the breeding population of ducks in California. Results of the current year breeding population survey are not usually available until June of each year. Based on the mallard breeding population, a decline was observed following the 1999 waterfowl season, but this trend was not statistically significant because the annual estimates have large confidence intervals. More recent mallard breeding population levels are similar to the mid 1990s levels when SWDs were not being used for duck hunting. Furthermore, breeding populations of mallards and total ducks have remained relatively stable since 2008 (Figure D-4).

Figure D-4. California Duck Breeding Population Estimates, 1992- 2014



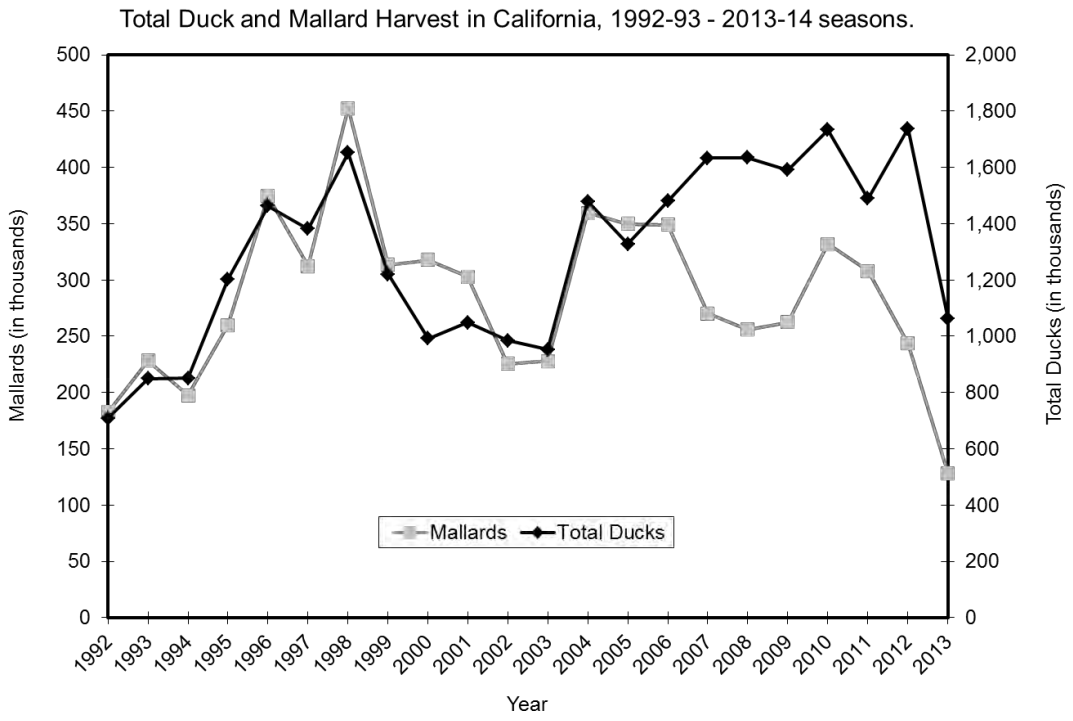
Total estimated duck harvest

The Service annually estimates the harvest of ducks in California and though out the United States. However, the most recent year of harvest is not available until July of the following year. For example, at this time, harvest information from the 2013-14 season is available but harvest estimates from 2014-15 will not be available until July, 2015. This information will be updated in the Final Environmental Document. There remain many factors (e.g. regulations, weather, hunter participation, age ratios in duck populations, etc.) besides the use SWDs that may impact hunter success on an individual hunt, which may transfer to decreased or increased total statewide duck harvest.

Relationships Among Survival & Harvest in Mallards: Issues in Findings

The studies cited above indicate that the use of SWDs increases harvest at the individual hunt level, however, despite the widespread use of SWDs (at least when last measured) overall estimates of harvest have not changed at the same magnitude as indicated in the individual hunt studies (Appendix E, Figure D-5). To have a biological effect at the population level, SWDs would have to be shown to lead to increased harvests and those increased harvests would have to be shown to lead to decreased annual survival rates. Other unmeasured variables act on populations during and after hunting seasons and it is not possible to unequivocally attribute potential population level effects due to SWDs through existing monitoring programs. However, banding data are the most likely of these monitoring programs that provide any inference on the role of SWDs on population parameters of ducks.

Figure D-5. Mallard and Total Duck (all species combined) harvest in California.



Numerous scientific studies have attempted to improve the understanding of the relationship among harvest rates and annual survival rates of waterfowl (Anderson and Burnham 1976, Nichols *et al*. 1984, Nichols and Hines 1982, Burnham and Anderson 1984, Johnson *et al*. 1986, Trost 1987, Raveling and Heitmeyer 1989, Nichols 1991, Smith and Reynolds 1992, Conn and Kendall 2004). Most of these studies have relied on banding data. As an example, Smith and Reynolds (1992) concluded that survival rates increased in response to restrictive regulations, and they rejected the completely compensatory model of population dynamics. Conversely, Sedinger and Rextad (1994) contested those conclusions because Smith and Reynolds pooled data and their analyses had low statistical power. Thus, there is still debate whether existing harvest levels affect survival rates in mallard populations. Partially due to this debate and uncertainty, the Service implemented Adaptive Harvest Management in 1995 to help reduce the uncertainty about the role of harvest and survival rates in population dynamics of mid-continent mallards.

The ability to detect significant changes in estimates of mallard recovery and survival rates in California, and relate these changes solely to the use of SWDs, is difficult if not impossible for several reasons.

First, survival and recovery rates are calculated through modeling using data from banded ducks. The data from these banded ducks consists of the number of birds banded (categorized by age, sex, date and location of banding) and reports of encountered bands (usually through hunting for game birds). The number of birds encountered divided by the number of birds banded is the recovery rate. However, not all bands encountered are reported, and an estimate of reporting rate is needed. The product of the recovery rate and the reporting rate is the harvest rate.

Reporting rates have been estimated because this rate is necessary to estimate the harvest rate and harvest rate is necessary to understand the relationship between harvest and population dynamics. Reporting rates vary widely due to band type and even geography (Nichols *et al*. 1991, 1995, Royle and Garretson 2004). Band types (i.e. their inscriptions) have changed over time. Before the 1990s, “avise” bands were used. These bands were inscribed with “AVISE BIRD BAND, WRITE WASHINGTON DC USA”. Later, “address” bands were introduced with the inscription “WRITE BIRD BAND LAUREL MD 20708”. These bands were replaced beginning in 1995, but not entirely until about 1999, with “toll-free” bands that were inscribed with “CALL 1 800 327 BAND and WRITE BIRD BAND LAUREL MD 20708 USA”. The adoption and widespread advertising of this new reporting method greatly increased reporting rate and apparent recovery rates. Due to the overlap of band types and the timing and duration of research into reporting rates, harvest rates can not be calculated for all areas in all years.

Secondly, changes in basic hunting regulations (e.g. season length and bag limits) occurred before and after the use of SWDs began. For instance, in 2001 (the first year of the December 1 regulation), the season was 100 days long with a 7 mallard (2 hen) daily bag limit whereas in 2002, the season was 74 days long with a 5 mallard (1 hen) daily bag limit. Thus, changes in harvest and survival rates due to basic regulations could be confounded with any changes to these parameters due to the use of SWDs.

More inferences could be made from the standard monitoring programs with stabilized regulations over a period of time.

Third, duck (and presumably mallard) harvest varies annually due to non-regulatory effects (weather, hunter participation, etc.) and survival rates vary due to variation in natural mortality (disease, etc.) (Miller et al. 1988).

With these caveats in mind, the Department calculated recovery rates and survival rates for mallards banded in California between 1988 and 2005. These ducks were banded by the Department, the California Waterfowl Association, and the U.S. Fish and Wildlife Service. Only normal, wild mallards banded from June to September with standard USFWS bands were used in this analysis. The Department examined the data by age class (adult and hatch-year or immature) and sex. Survival and recovery rates were calculated using Brownie models (Brownie *et al.* 1985) in Program MARK (White and Burnham 1999). Harvest rates were calculated from recovery rates by incorporating reporting rates (Nichols *et al.* 1995, Royle and Garretson 2004). For comparison purposes, the Department summarized harvest rates for mid-continent mallards during liberal seasons (1979-1984) (Smith and Reynolds 1992) and for mallards from eastern Washington (1981-198) (Giudice 2003).

For data from mallards banded in California, the data were portioned into 4 time periods (Table D-3): Period 1 (Restrictive season lengths and bag limits, no SWD); Period 2 (Liberal season lengths and bag limits, no SWD); Period 3 (Liberal regulations with SWD, but no December 1 regulation) and, Period 4 (Liberal regulations with December 1 regulation). If SWD affected harvest and survival rates, harvest rates should be highest and survival rates lowest during Period 3. If regulations by themselves change these parameters, harvest rates should be higher and survival rates lower in Period 2 compared to Period 1. If SWD had an effect, survival rates should be lower and harvest rates higher in Period 3 compared to Period 2. If the December 1 regulation had an effect, harvest rates should be lower and survival rates higher during Period 4 compared to Period 3.

Table D-3. Time periods used to summarize basic regulations, SWD use, and the December 1 regulation.

Time Period	Starting Season	Ending Season	Regulations	Pre or Post-SWD	Dec 1st Restrictions
1st	1988	1994	Conservative	Pre-SWD	No
2nd	1995	1997	Liberal	Pre-SWD	No
3rd	1998	2000	Liberal	Post-SWD	No
4th	2001	2004	Liberal	Post-SWD	Yes

Unfortunately, due to the introduction of “toll-free” bands and the increasing and changing reporting rates, harvest rate estimates are only available for Periods 1 and 4. Harvest rates for adults between Period 1 and Period 4 were unchanged and lower than those rates for eastern Washington and mallards from the mid-continent region (Table D-4). However, harvest rates of immature mallards banded in California have increased between periods 1 and 4 by 62 and 30 percent for males and females, respectively. Thus, the combination of regulation changes and use of SWD did not change harvest rates of adults, but the combination of more liberal regulations and the use of SWD did change harvest rates of immature mallards. The combination of liberalized regulations and SWD appears to have increased the harvest rate of mallards banded in California to higher levels than occurred in the mid-continent region or eastern Washington (Table D-4).

Table D-4. Harvest rates for mallards banded in California (restrictive and liberal periods), eastern Washington (liberal period) and the mid-continent region (liberal period).

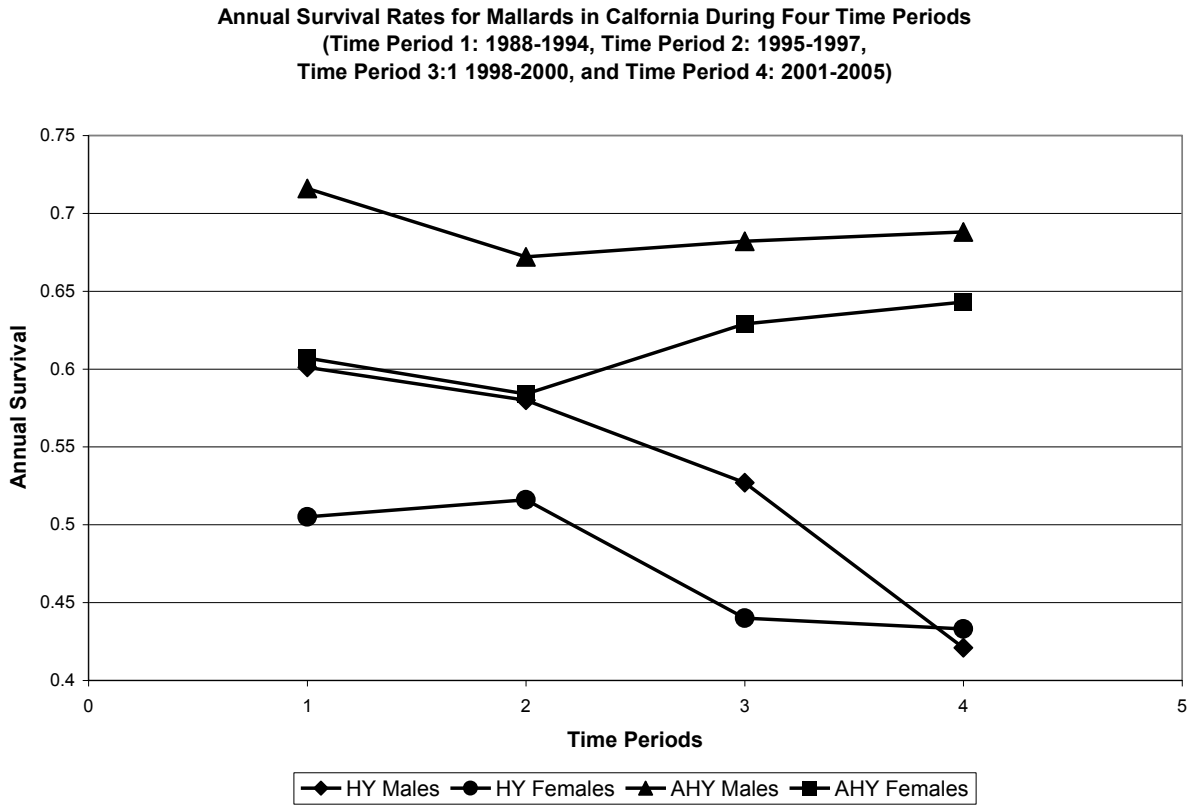
	California (restrictive)	**California (liberal)**	**Eastern Washington**	**Mid-Continent (liberal)**
Adult Males	0.138	0.138	0.172	0.150
Hatch-Year Males	0.202	0.327	0.286	0.228
Adult Females	0.058	0.058	0.100	0.097
Hatch-Year Females	0.143	0.186	0.172	0.157

Survival rates could be calculated for each cohort (age and sex) for each period (Figure D-6) since recovery and survival rate are not conditional on each other. Covariance among recovery and survival rates must be addressed to understand the impact of harvest on survival rates. Although recovery rates may have increased during these periods, it would not have as large an impact on survival rates, as compared to computed harvest rates. Furthermore, the grouping into time periods also correlates with the introduction of different band types.

Survival rates were constant for adult birds of sexes irrespective of harvest regulations, the use of SWD or the December 1 regulation (Figure D-6). However, survival rates for immature birds declined but only for males was the decline statistically significant (P=0.048).

From these analyses, it appears that adult mallard recovery, harvest and survival rates have not changed despite changes in regulations, the use of SWDs, or the imposition of the December 1 regulation. In contrast, immature mallard harvest rates have increased and survival rates have declined, but these changes may have been due to changing basic regulations, the use of SWDs, both, or other unmeasured variables.

Figure D-6. Annual survival rates of Mallards banded in California.



Public Perception of SWDs

The findings of this section have concentrated on biological information as related to the SWD in California. However, since past public views to the Commission has demonstrated different views on "fair chase", public opinion information has been added to this review of this topic. In 2005, D. J. Case & Associates, as commissioned by the Association of Fish and Wildlife Agencies, released the findings of the National Duck Hunter Survey. According to this study, 55% of California duck hunters stated that SWDs should be allowed, whereas 26% opposed their use and 19% had no opinion on the subject. Other surveys have shown a wide variety of responses to their opinions on SWDs. For instance, California Waterfowl Association's (CWA) 2006 survey indicated that a majority of hunters opposed electronic decoys, but accepted wind driven decoys (CWA, pers. comm.).

Summary of Findings

There is substantial evidence that SWDs can/have increased harvest and harvest potential on an individual hunt basis. Although SWDs have been shown to increase potential harvest, total harvest estimates have not increased at the same magnitude. Furthermore, SWDs have not increased harvest rates nor decreased survival rates on adult mallards. In hatch-year mallards, harvest rates have increased over 60 percent

on males, and survival rates have significantly declined. However, this is not a cause-and-effect relationship because other unmeasured variables were likely occurring simultaneously. The implementation of the December 1 regulation appears to have reduced daily harvest rates of mallards on public hunt areas when compared to unrestricted use of SWDs (1998-2000).

There is no clearly explicit link detectable through existing monitoring programs (or population level measures) between the introduction of SWDs and changes in measured population parameters. There remains no substantial evidence either for or against their large-scale effect on waterfowl populations. There are strongly held opposing positions on the “fair-chase” and other aspects of SWDs. For this reason, the Department has provided an alternative in Chapter 3.

Appendix E. Estimated Retrieved Harvest of Certain Ducks in California, 1962-2013

Year	Mallard	Gadwall	American Wigeon	G-w Teal	B-w/Cin. Teal	Northern Shoveler	Pintail	Wood Duck	Red-head	Canvas-back	All Other Species	TOTAL
1961	197.0	19.2	183.9	153.3	28.9	108.4	299.3	7.3	0.8	0.4	49.3	1,047.8
1962	167.0	17.5	128.5	145.1	48.8	86.8	285.3	12.1	1.0	0.0	70.1	962.2
1963	267.5	42.3	159.2	242.5	59.5	182.3	415.7	14.7	4.3	0.0	72.0	1,460.0
1964	249.0	40.5	166.3	214.6	49.4	77.2	342.0	17.0	7.8	9.2	74.2	1,247.3
1965	295.0	41.7	202.2	216.2	59.1	139.6	373.0	34.7	10.6	8.3	79.9	1,460.3
1966	288.4	51.5	215.2	267.1	36.6	162.3	563.0	13.1	8.6	39.9	97.5	1,743.2
1967	446.0	85.3	311.8	363.1	73.1	194.2	798.5	24.3	9.8	15.5	133.6	2,455.2
1968	236.2	34.2	169.6	262.5	42.6	111.5	381.1	11.3	5.5	10.5	68.3	1,333.4
1969	331.7	43.3	229.9	332.2	49.2	197.4	900.5	18.8	6.0	12.3	94.4	2,215.8
1970	371.0	43.5	264.0	361.3	38.2	201.8	1,032.9	21.4	12.9	26.9	77.7	2,451.5
1971	313.4	66.0	255.3	295.9	44.6	189.3	752.1	14.2	13.2	34.4	96.6	2,075.0
1972	321.8	49.3	231.5	332.6	64.9	157.4	715.3	21.2	5.8	0.9	90.2	1,991.0
1973	219.4	32.4	145.6	245.2	94.8	101.1	477.0	32.7	9.5	13.8	79.5	1,451.0
1974	292.3	60.2	194.3	319.6	59.8	167.4	712.4	21.7	8.9	27.1	59.4	1,923.0
1975	293.1	46.5	193.9	344.7	47.7	184.5	746.9	19.3	5.4	28.1	49.5	1,959.6
1976	305.6	37.6	278.7	403.0	42.5	185.6	680.6	23.4	6.6	34.2	82.9	2,080.6
1977	229.7	27.4	162.4	306.4	44.8	115.3	350.8	24.3	7.1	22.4	82.9	1,373.5
1978	294.3	39.2	179.4	405.1	64.9	161.0	596.0	29.0	8.2	14.1	66.0	1,857.2
1979	260.7	47.9	168.3	292.0	42.4	112.6	641.5	12.4	6.6	14.8	63.1	1,662.3
1980	238.6	64.2	165.6	259.1	27.1	108.4	410.0	40.2	10.8	10.3	67.6	1,401.8
1981	239.0	33.6	125.8	211.8	28.9	120.4	261.0	23.8	7.9	14.3	73.8	1,140.3
1982	284.2	53.8	122.8	266.5	50.3	140.2	327.9	26.2	10.9	10.6	59.6	1,353.1
1983	298.6	59.2	103.7	203.7	58.9	112.4	334.3	23.1	14.8	6.9	71.4	1,287.0
1984	265.1	43.3	94.6	178.2	52.6	91.9	194.9	15.7	6.6	12.2	50.8	1,005.9
1985	261.8	53.6	106.0	180.7	28.6	99.6	200.3	9.5	6.7	27.5	52.7	1,027.0
1986	257.6	57.7	113.9	176.8	19.0	86.6	194.5	20.2	4.4	16.3	43.2	990.2
1987	228.4	50.4	124.3	214.1	29.4	113.1	243.8	11.8	5.3	12.6	49.8	1,083.0
1988	139.7	23.2	62.7	122.1	16.0	44.1	70.3	9.6	2.3	0.1	23.7	513.8
1989	175.8	42.1	71.8	185.0	31.9	64.2	91.6	15.9	4.6	7.2	33.3	723.3
1990	179.7	45.2	80.1	149.9	19.4	69.5	80.3	11.4	2.5	4.2	28.7	671.0
1991	161.2	40.4	94.3	169.7	13.7	49.4	81.3	14.3	1.8	4.7	23.0	653.9
1992	182.7	33.3	72.9	183.9	18.4	74.1	75.0	16.4	3.5	8.8	39.2	708.1
1993	228.4	63.1	77.3	219.2	25.7	60.2	90.5	31.9	5.6	10.2	37.1	849.2
1994	197.4	68.7	97.6	183.0	14.7	106.0	92.0	20.8	5.8	14.4	51.0	851.3
1995	259.8	85.4	159.2	291.2	35.4	101.5	162.7	28.8	9.0	10.2	59.6	1,202.8
1996	374.4	104.1	175.6	306.5	39.4	164.1	182.0	26.4	10.8	12.7	66.4	1,462.4
1997	312.2	79.4	162.0	311.6	36.9	172.6	188.2	22.5	11.7	17.1	67.3	1,381.5
1998	452.6	129.6	166.5	352.4	62.0	217.1	146.3	33.4	15.9	21.4	55.2	1,652.4
1999	313.5	69.4	153.9	285.5	66.8	116.1	123.3	25.6	5.0	13.8	47.9	1,220.8
2000	317.7	62.4	113.1	207.2	31.3	87.5	85.4	32.0	4.7	10.6	39.6	991.5
2001	302.8	65.4	146.9	200.5	36.1	111.6	89.7	32.5	4.3	6.6	51.5	1,047.9
2002	225.4	83.7	134.4	239.7	35.6	103.9	79.9	24.7	4.9	0.7	52.4	985.3
2003	228.1	79.7	112.8	218.0	46.2	96.2	79.2	25.2	8.2	7.0	51.5	952.1
2004	359.7	132.6	196.8	348.7	57.3	147.7	98.8	22.5	9.6	11.5	94.1	1,479.3
2005	349.8	105.0	176.8	297.6	58.2	128.8	115.7	39.4	7.8	4.8	43.3	1,327.2
2006	349.1	124.2	165.7	331.3	56.9	224.6	123.2	31.3	9.1	17.5	47.9	1,480.8
2007	270.3	122.2	218.8	402.9	43.4	275.3	137.9	33.7	9.5	32.6	86.4	1,632.9
2008	255.9	110.2	271.8	468.5	39.9	209.5	169.4	36.3	7.0	0.6	64.2	1,633.7
2009	262.4	117.9	195.3	387.5	35.3	157.7	177.1	27.1	6.6	9.8	63.6	1,591.4
2010	332.0	124.4	226.2	394.9	48.2	220.8	242.6	34.1	7.7	17.6	85.6	1,734.1
2011	308.1	106.2	169.8	311.9	36.9	253.9	201.6	21.0	14.3	15.9	47.2	1,489.1
2012	243.5	95.3	193.7	371.2	31.9	291.5	201.1	21.9	14.6	23.4	25.0	1,738.1
2013*	127.9	60.7	152.5	258.8	22.0	197.3	130.5	5.5	7.7	30.0	67.9	1,062.3
Averages:												
1961-12	271.0	64.4	163.1	271.5	42.4	140.6	312.2	22.4	7.6	13.9	63.1	1,378.8
1961-65	235.1	32.3	168.0	194.3	49.2	118.9	343.1	17.2	4.9	3.6	69.1	1,235.5
1966-70	334.7	51.6	238.1	317.2	47.9	173.4	735.2	17.8	8.6	21.0	94.3	2,039.8
1971-75	288.0	50.9	204.1	307.6	62.4	159.9	680.7	21.8	8.6	20.9	75.0	1,879.9
1976-80	265.8	43.2	190.9	333.1	44.3	136.6	535.8	25.8	7.9	19.2	72.5	1,675.1
1981-85	269.7	48.7	110.6	208.2	43.9	112.9	263.7	19.7	9.4	14.3	61.7	1,162.7
1986-90	196.2	43.7	90.6	169.6	23.1	75.5	136.1	13.8	3.8	8.1	35.8	796.3
1991-95	205.9	58.2	100.3	209.4	21.6	78.3	100.3	22.4	5.1	9.7	42.0	853.1
1996-00	354.1	89.0	154.2	292.6	47.3	151.5	145.0	28.0	9.6	15.1	55.3	1,341.7
2001-05	293.2	93.3	153.5	260.9	46.7	117.6	92.7	28.9	7.0	6.1	58.6	1,158.4
2006-12	296.3	117.5	207.9	382.8	43.4	223.6	175.3	30.6	9.0	15.7	65.8	1,593.7
% Change from:												
2012	-47.5%	-36.3%	-21.3%	-30.3%	-31.0%	-32.3%	-35.1%	-75.1%	-47.3%	28.2%	171.6%	-38.9%
1961-12	-52.8%	-5.8%	-6.5%	-4.7%	-48.1%	40.3%	-58.2%	-75.6%	1.9%	115.8%	7.7%	-23.0%
% State's Total Duck Harvest:												
2013	12.0%	5.7%	14.4%	24.4%	2.1%	18.6%	12.3%	0.5%	0.7%	2.8%	6.4%	
1961-12	19.7%	4.7%	11.8%	19.7%	3.1%	10.2%	22.6%	1.6%	0.5%	1.0%	4.6%	
* Preliminary Data												

Appendix F. Possible Effects of Climate Change Impacts on Waterfowl

Over the long term climate change models suggest temperature increases in many areas, both increases and decreases in precipitation, its timing, sea level rise, changes in the timing and length of the four seasons, declining snow packs and increasing frequency and intensity of severe weather events. Many uncertainties make it difficult to predict the precise impacts that climate change will have on wetlands and waterfowl. The effects of climate change on waterfowl populations, including their size and distribution, will probably be species specific and variable, with some effects considered negative and others considered positive (Anderson and Sorenson 2001). For example, a longer and warmer ice-free season in the Arctic would be expected to result in higher overall reproductive success for Arctic nesting geese (Batt 1998).

Breeding Season

Increasing spring temperatures have led to earlier arrival of waterfowl on northern breeding areas (Murphy-Klassen et al. 2005), yet nest survival has not decreased at this point of time (Drever and Clark 2007). In fact, earlier nest initiations are often more successful (Emery et al. 2005, Sedinger et al. 2008). However, future changes in wetland distribution and type (Johnson et al. 2005) on northern breeding grounds may impact settling patterns (Johnson and Grier 1988), and potentially recruitment for certain species through differences in breeding probability (Krapu et al. 1983), nest survival, and duckling survival. In California, areas with wetland brood habitat may become more limited if precipitation decreases with increasing temperatures, as predicted for the prairie pothole region of the United States and Canada (Sorenson et al 1998). Production of waterfowl that rely on agricultural habitats may be similarly affected if water availability (amounts and or timing) change.

Non-breeding Season

The Central Valley of California has one of the world's largest concentrations of over-wintering waterfowl (Heitmeyer et al. 1989). The primary expected response of waterfowl to climate change is redistribution as birds seek to maintain energy balance. Increased fall and winter temperatures in northern regions would make it unnecessary for waterfowl to migrate as far south and the wintering populations of waterfowl in California may be reduced. Shifting patterns of precipitation and temperatures may cause decreased availability of water for managed wetlands and agricultural production in the Central Valley. Changes in water availability and timing (Miller et al 2003) would likely have the greatest impact on rice agriculture, an important component of wintering waterfowl habitat in California. Decreasing habitats may cause a decline in body condition which may impact recruitment and survival in waterfowl populations. Ultimately, this will cause decreased recruitment as birds shift out of optimal nesting habitats (e. g. Ward et al. 2005), and a decrease in over-wintering populations.

Summary of Findings

There is substantial evidence that climate change will cause changes in habitats and other factors that affect waterfowl populations over the long term. Waterfowl populations are assessed in many ways on an annual basis (See pages 38-40 of the 2006 Final Environmental Document for Migratory Game Bird Hunting, SCH #2006042115, incorporated by reference, available at 1812 9th Street, Sacramento 95811). In summary, the condition of breeding habitats is assessed annually during the breeding population surveys conducted by the Service with assistance from some states and the Canadian Wildlife Service (CWS) in the spring and summer. The specific methodology of these surveys is provided in Chapter 3, pages 55-57, 2006 Final Environmental Document for Migratory Game Bird Hunting, SCH #2006042115, incorporated by reference, available at 1812 9th Street, Sacramento 95811).

Because the effect of regulated harvest is minimal (pages 57-67 of 2006 Final Environmental Document for Migratory Game Bird Hunting, SCH #2006042115, , incorporated by reference, available at 1812 9th Street, Sacramento 95811) implementation of the proposed project in the current year is not expected to result in significant negative effects to waterfowl populations. The effect is minimal because summary, the weight of historic scientific evidence leans toward the compensatory mortality hypothesis, though there are enough ambiguities to make complete reliance on this hypothesis as a management strategy an unwise approach (USDI 1988a:96). Accordingly, restrictive regulations have been established when populations reached low levels. For example, duck seasons were reduced from 93 days to 59 days, and bag limits were reduced from seven birds per day to four birds per day during the late 1980s in response to declines in duck populations caused by drought (Page 66, 2006 Final Environmental Document for Migratory Game Bird Hunting, SCH #2006042115, incorporated by reference, available at 1812 9th Street, Sacramento 95811).

FGC - 670.1 (3/94)

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2008 JAN 23 11:2 1

A PETITION TO THE STATE OF CALIFORNIA FISH AND GAME COMMISSION

For action pursuant to Section 670.1, Title 14, California Code of Regulations (CCR) and Sections 2072 and 2073 of the Fish and Game Code relating to listing and delisting endangered and threatened species of plants and animals.

I. SPECIES BEING PETITIONED:

Common Name: PACIFIC FISHER

Scientific Name: MARTES PENNANTI

II. RECOMMENDED ACTION (Check appropriate categories):

a. List ☒

As Endangered ☒
As Threatened ☒

b. Change Status ☐

from _____
to _____

Or Delist ☐

III. AUTHOR OF PETITION:

Name: PAUL SPITLER, CBD

Address: PO BOX 2175, BEND OR 97709

Phone Number: 541 - 306-4772

I hereby certify that, to the best of my knowledge, all statements made in this petition are true and complete.

Signature: [signature]

Date: 1-22-08

FGC - 670.1 (3/94)

PETITION TO THE STATE OF CALIFORNIA FISH AND GAME COMMISSION
SUPPORTING INFORMATION FOR Martes pennanti (Pacific Fisher)
Scientific Name **Common Name**

EXECUTIVE SUMMARY

Provide a brief statement explaining why the petitioned action is being recommended. Include a brief summary of each section of the petition. If a species is being petitioned for listing, state why its survival is threatened by any one or a combination of the following factors (listed in Section 670.1, Title 14, CCR):

(1) present or threatened modification or destruction of its habitat;
(2) overexploitation;
(3) predation;
(4) competition;
(5) disease; or
(6) other natural occurrences or human-related activities.

If a species is being recommended for delisting, indicate why State-listing is no longer warranted, and state why any one or a combination of the aforementioned factors no longer threatens its existence.

1. POPULATION TRENDS

Describe current population trends (with numbers and rate) and relate these to viable population numbers. Explain survey methodology used to arrive at numbers or estimates and what assumptions, if any, were involved.

2. RANGE AND DISTRIBUTION

In the text, indicate the percentage of historic distribution that is in existence and the rate of loss. If appropriate, indicate the number of extant occurrences, populations or portions of populations in California. Indicate whether the rate of loss is accelerating, and estimate when extinction would occur if current trends continue. Discuss the relationship between historic and current acreage and degree of habitat fragmentation. Describe the quality of the existing habitats in terms of ability to maintain viable populations with or without enhancement. For delisting, indicate how current distribution reflects the recovery of the species since its listing.

3. ABUNDANCE

Provide available historic and current population estimates/trends, densities, vigor, sex and age structures, and explain population changes relative to human-caused impacts or natural events. Compare current and historic abundance in terms of overall population size or size of occurrences, populations or portions of populations, as appropriate. Describe current population trends (with numbers and rate) and relate these to viable population numbers. Explain survey methodology used to arrive at numbers or estimates and what assumptions, if any, were involved.

4. LIFE HISTORY (SPECIES DESCRIPTION, BIOLOGY, AND ECOLOGY)

Include pertinent information that is available on species identification, taxonomy and systematics, seasonal activity or phenology, reproductive biology, mortality/natality, longevity, growth rate, growth form, food habits, habitat relationships and ecological niche or ecological attributes, interactions with other species or special habitat requirements that may increase

vulnerability of the species to certain natural or human-caused adverse impacts (e.g., obligate wetland or riparian habitat species, low birthrate, colonial species).

5. KIND OF HABITAT NECESSARY FOR SURVIVAL

Describe habitat features that are thought to be important to the species' ability to maintain viable population levels. Any or all of the following features may be included, as appropriate:

Plant community; edaphic conditions; climate; light; topography/microtopography; natural disturbance; interactions with other plants or animals; associated species; elevation; migration or movement corridors; wintering habitat; breeding habitat; foraging habitat; other habitat features.

For aquatic organisms, the following features may be included in addition to the above:

Water temperature; water flow patterns; stream gradient; water chemistry (dissolved oxygen, salinity, etc.); water depth; bottom type; cover type and availability; fish assemblage/community; aquatic plant abundance; other habitat features.

6. FACTORS AFFECTING ABILITY TO SURVIVE AND REPRODUCE

Discuss the basis for the threats to the species or subspecies, or to each population, occurrence or portion of range (as appropriate) due to one or more of the following factors:

(1) present or threatened modification or destruction of its habitat;
(2) overexploitation;
(3) predation;
(4) competition;
(5) disease; or
(6) other natural events or human-related activities.

Identify the direct, indirect, and cumulative adverse impacts and discuss how these are contributing to the decline of the species. Indicate whether the species is vulnerable to random catastrophic events.

For delisting, state why any one or a combination of the aforementioned factors no longer threatens the existence of the species.

7. DEGREE AND IMMEDIACY OF THREAT

Indicate the immediacy of the threat and the magnitude of loss or rate of decline that has occurred to the present or is expected to occur without protective measures.

8. IMPACT OF EXISTING MANAGEMENT EFFORTS

Describe any ongoing protective measures or existing management plans for the species or its habitat. Information on species or land management activities that are impacting populations or portions of the range and information on proposed land-use changes should be included. This may be best accomplished by discussing populations or portions of the range. A chart may be useful.

Include available information on any or all of the following:

(1) property ownership/jurisdiction for known populations or portions of the range;
(2) current land use;
(3) protective measures being taken, if any, and effectiveness of current management activities;
(4) current research on the species;
(5) existing management/recovery plans and the extent of their implementation;
(6) proposed land-use changes (include knowledge of forthcoming California Environmental Quality Act documents that may or should address impacts, and lead agencies involved); or
(7) county general plans, federal and State agency plans/actions or other plans/actions that address or should address the species.

9. SUGGESTIONS FOR FUTURE MANAGEMENT

Describe activities that may be necessary to ensure future survival of the species after listing or delisting. Include recommendations for any or all of the following:

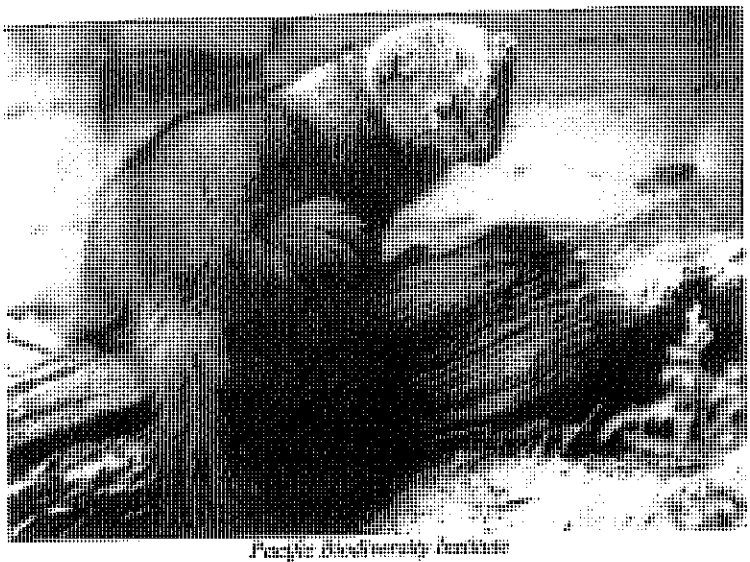
(1) activities that would protect existing populations (site maintenance, preserve design establishment, etc.);
(2) monitoring programs and studies;
(3) needed amendments to existing management and land-use plans, including county general plans;
(4) agencies/organizations that should be involved in planning and implementing management and recovery actions;
(5) other activities that would help protect existing habitat or ensure survival of the species;
(6) how other sensitive species (listed and unlisted) may benefit from protection of this species;
(7) how other species/habitats may be impacted by management and recovery activities for this species; or
(8) at what point this species would be considered stable and sustainable.

10. AVAILABILITY AND SOURCES OF INFORMATION

Cite literature, available specimen collection records, and other pertinent reference materials. Attach documents critical to the recommended action. Be sure to include recent status surveys. List names, addresses, and telephone numbers of persons providing unpublished information and list those supporting the recommended action.

11. DETAILED DISTRIBUTION MAP

Delineate on appropriate maps the historic and present distribution (estimated if not known). Include one map of California showing general distribution, and U.S. Geological Survey topographical maps (or equivalent) of appropriate scale, for more detailed distribution information, including locations of occurrences, populations or portions of populations, as appropriate. Include historic and current distribution as documented by literature, museum records, Natural Diversity Data Base and other Department of Fish and Game records, and testimony of knowledgeable individuals. All maps must be suitable for black and white reproduction and fully labeled, including borders, base map name, map scale and species name, and should not exceed 11" x 14" in size.



Pacific Biodiversity Institute

A Petition to list the Pacific fisher (*Martes pennanti*) as an Endangered or Threatened Species under the California Endangered Species Act

Center for Biological Diversity

January 2008

CENTER *for* BIOLOGICAL DIVERSITY

Because life is good.

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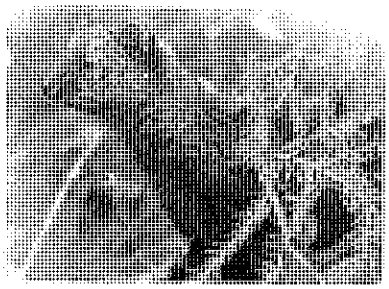
EXECUTIVE SUMMARY

"Once [the fisher is restored], we will be an important step closer to returning our forests to ecological wholeness. As one biologist points out, 'Top-level carnivores tend to have a big influence on ecosystems. Without the fisher, that role is missing from West Coast forests.'"

Tim McNulty; Excerpted from the November 2001 issue of Forest Magazine

The Center for Biological Diversity submits this petition to list the California population of the Pacific fisher (*Martes pennanti*) as an endangered or threatened species under the California Endangered Species Act, Fish and Game Code 2070 *et seq.* ("CESA"). This petition demonstrates that the Pacific fisher has been extirpated throughout more than half its former range in California, is in serious danger of becoming extinct in the state, and warrants immediate listing under CESA.



Oregon Department of Fish and Wildlife

The fisher is a specialized forest carnivore related to weasels and otters that is associated with mature and old-growth forests. Historic trapping for the animal's valuable pelt, timber harvest, loss of an important prey item (porcupine), urban development, and other factors have severely reduced the fisher's range across the United States. In the eastern United States, the fisher recovered much of its range after strict trapping regulations, regrowth of forest from abandoned farmlands, and reintroductions. In the western United States, however, the genetically 'distinct population segment' (hereafter referred to as the "Pacific fisher") has not re-inhabited the majority of its former range, despite the cessation of legal trapping in the 1930s and 1940s. The Pacific fisher is apparently extinct in the state of Washington, and is reduced to just three small, isolated populations in southern Oregon and California. **The Pacific fisher now occupies less than half the range it occupied in California 75 years ago.**

The Pacific fisher in the United States is reduced to one small reintroduced population in southern Oregon near Crater Lake, and two small, isolated, native populations in California: one in northwestern California-southwestern Oregon (in the North Coast Range and Klamath region) numbering at most 750 animals, and another in the southern Sierra Nevada numbering at most 360 individuals. **Thus, the maximum population estimate for Pacific fishers within the entire state of California is no more than 1,110 animals.** Moreover, the two remnant populations are separated by approximately 430 kilometers, which greatly exceeds the maximum dispersal distance ever recorded for a fisher, rendering genetic exchange between the two native populations virtually impossible. Finally, due to the extinction of the Pacific fisher from Washington and most of Oregon, the three small populations in California and southern Oregon are themselves completely isolated from populations in British Columbia.

Reestablishing the Pacific fisher in a larger portion of its range is necessary to ensure its long-term survival, provided that suitable habitat is conserved and restored. However, **both of California's fisher populations are threatened by continued logging, development, roads, and other anthropogenic factors, as well as low genetic diversity, population isolation, and demographic stochasticity.** Scientists have been warning of the Pacific fisher's perilous population decline and impending extinction in California for more than a decade, yet existing regulatory mechanisms remain grossly inadequate to protect the species and its habitat: the Sierra Nevada Framework, the Northwest Forest Plan, and the California State Forest Practices Code all fail to prevent continued loss and degradation of mature and old-growth forests on public and private lands. In 2000, in response to a petition submitted by the Center for Biological Diversity and others, the U.S. Fish and Wildlife Service determined that the Pacific fisher warranted listing under the federal Endangered Species Act: the distinct population segment is designated as a candidate species. Unfortunately, candidate status under the federal Endangered Species Act offers no legal protection. Survival and recovery of this highly imperiled, ecologically important, top-level carnivore in California is unlikely to happen without protection provided by CESA. Thus, we are petitioning to list the Pacific fisher as an endangered or threatened species throughout its historic California range.

STATUTORY FRAMEWORK AND REQUESTED ACTION

Three petitions were submitted to list the fisher in the western United States under the federal Endangered Species Act, 16 U.S.C. § 1531 *et seq.* (Beckwitt 1990, Carlton 1994, Greenwald et al. 2000). Beckwitt (1990) petitioned to list the fisher as endangered within the West Coast Range, but as the subspecies *Martes pennanti pacifica*. The U.S. Fish and Wildlife Service (USFWS) determined that there was insufficient information to indicate *pacifica* is a valid subspecies, but did recognize the West Coast Range as a "distinct population segment" (90-day finding on a petition to list the Pacific fisher as endangered, Federal Register January 11, 1991). They rejected the petition, however, because of lack of information, which was limited to only one study on habitat use in the western United States and little information on current distribution.

Carlton (1994) petitioned to list the fisher in the entire western United States as endangered. This petition was ultimately rejected because the USFWS claimed the petitioner had failed to provide evidence indicating that the two remaining populations (Pacific States and northern Rocky Mountains) were distinct population segments listable under the Act (90-day finding for a petition to list the fisher in the western United States as threatened, Federal Register March 1, 1996). The finding, however, acknowledged that "available information indicates fishers have experienced declines in the past, and may be vulnerable to the removal and fragmentation of mature/old-growth habitat and incidental trapping pressure."

Greenwald et al. (2000) petitioned to list the West Coast population segment of fisher as endangered. USFWS determined that a listing of the West Coast population segment of the fisher was "warranted but precluded by other, higher priority listing actions" (12-month finding for a petition to list west coast distinct population segment of the fisher; Proposed Rule, Federal Register April 8, 2004). The finding acknowledged that "because of small population sizes and isolation, fisher populations on the West Coast may be in danger of extirpation" and that "existing regulatory mechanisms are not sufficient to protect the [distinct population segment] as a whole from habitat pressures."

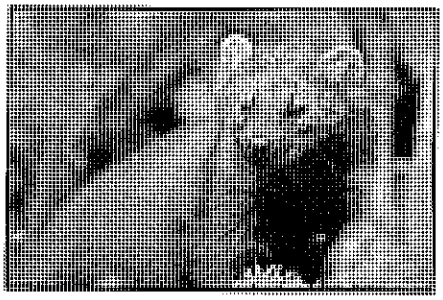
Since these petitions were filed, more information on fisher habitat use, current distribution and status, and ongoing loss of habitat has become available and is incorporated into this CESA petition. CESA is modeled after the federal ESA, and is intended to provide an additional layer of protection for imperiled species in California. The CESA may be more protective than the federal ESA. CESA § 2072.3 states:

> "[t]o be accepted, a petition shall, at a minimum, include sufficient scientific information that a petitioned action may be warranted. Petitions shall include information regarding the population trend, range, distribution, abundance, and life history of a species, the factors affecting the ability of the population to survive and reproduce, the degree and immediacy of the threat, the impact of existing management efforts, suggestions for future management, and the availability and sources of information. The petition shall also include information regarding the kind of habitat necessary for species survival, a detailed distribution map, and any other factors that the petitioner deems relevant."

The available scientific data, including recent distribution maps, population estimates, and specific habitat requirements as well as immediate and future threats and lack of adequate regulations that are outlined in this petition, demonstrate unequivocally that the Pacific fisher has experienced a significant diminution of habitat and range in the state of California, and is vulnerable extinction.

ECOLOGY OF THE FISHER

I. Species Description



The fisher is a member of the weasel family (Mustelidae). The fisher has a long slender body with short legs and a long, bushy tail; a triangular head with a sharp, pronounced muzzle; forward-facing eyes; and large, rounded ears (Powell and Zielinski 1994). Sexual dimorphism is pronounced, with males weighing between 3.5 and 5.5 kg and ranging in length from 90 to 120 cm, and females weighing between 2.0 and 2.5 kg and ranging from 75 to 95 cm long (Powell 1993). Fishers are mostly dark brown in color. Their face, neck, and shoulders are silver or light brown, contrasting with the guard hairs on the tail, legs, and rump, which are glossy black (Powell and Zielinski 1994). Their undersurface is uniformly brown, except for white or cream colored patches around the genitals and on the chest, which may be individually distinctive (Powell 1993). The fur ranges in length from 30 mm on the stomach and chest to 70 mm on the back (Powell 1993). Fishers molt once a year beginning in late summer and finishing by November or December – in September and October the guard hairs are noticeably shorter than during the rest of the year (Powell and Zielinski 1994). Fishers have five toes with retractable but not sheathed claws. Their feet are large and plantigrade with four central pads and a pad on each toe. On the hindpaws, the central pads have circular patches of coarse hair that are associated with plantar glands. These glands produce a distinctive odor and are believed to be used for communication during reproduction (Powell 1993). Based on an examination of several skins, Grinnell et al. (1937) noted that fishers from the Sierra Nevada had a "tendency" to be paler in color than fishers from other parts of the United States.

II. Taxonomy and Genetics

A member of the family Mustelidae, the fisher is the largest member of the genus *Martes*, which includes the yellow-throated martens, true martens, and fishers. Formerly included in the *Mustela*, the *Martes* are distinguished from this group by an additional premolar in each jaw, among other things (see Anderson 1994). *Martes pennanti* (Erxleben) is the only extant species of the fisher. Goldman (1935) recognized three subspecies: *Martes pennanti pennanti* (eastern and central North America), *Martes pennanti columbiana* (Rocky Mountains), and *Martes pennanti pacifica* (West Coast North America). Conversely, both Grinnell et al. (1937) and Hagmeir (1959) examined specimens from across the range of the fisher without finding sufficient differences in morphology or pelage to support recognition of separate subspecies.

Recent genetic analyses found patterns of population subdivision similar to the earlier described subspecies (Drew et al. 2003). This observed variation was considered by Drew et al. to be insufficient to warrant recognition of subspecies, but sufficient to support recognition of distinct population segments. The West Coast population of the fisher was also recognized as a distinct population segment by USDI (1991, 2004). The present document recognizes the fisher in its West Coast range as a distinct population segment, hereafter denoted as the Pacific fisher, but refers to it as *Martes pennanti*.

Paleonological evidence suggests that forests along the Pacific Coast were colonized by fishers during the Holocene era (Wisely et al. 2004). Wisely et al. (2004) hypothesized that fishers colonized the Sierra Nevada in a 'stepping-stone' manner from north to south over the last 5,000 years, with very little gene flow among populations after colonization. Recently, fishers have been extirpated in the northern Sierra Nevada, most of Oregon, and all of Washington. The authors document a progressive loss of genetic diversity along the north-south gradient, with allelic richness of the southern Sierra Nevada at the lowest levels of all populations in theirs and previous studies of fisher. High levels of genetic differentiation and population isolation were confirmed by the exceptionally low effective numbers of migrants between populations. Even two southern Sierra populations separated by <100 km of contiguous forest but divided by the Kings River, were estimated to exchange, on average, only one migrant every 50 generations (Wisely et al. 2004).

III. Diet

Fishers are opportunistic, generalist predators with a diverse diet, including birds, porcupines (*Erethizon dorsatum*), snowshoe hares (*Lepus americana*), squirrels (*Sciurus* spp., *Tamiasciurus* spp., *Glaucomys* spp.), mice and voles (*Clethrionomys gapperi*, *Microtus* spp., *Peromyscus* spp.), shrews (*Blarina* spp., *Sorex* spp.), insects, carrion of deer (*Odocoileus* spp.) and moose (*Alces alces*), vegetation, and fruit (Powell 1993, Martin 1994, Powell and Zielinski 1994, Zielinski et al. 1999, Weir et al. 2005, Bowman et al. 2006). Pacific fishers in the southern Sierra Nevada and northern California utilize substantially different prey than fishers in other parts of the country (Zielinski et al. 1999). The diet of fishers in the southern Sierra Nevada is characterized by taxonomic diversity and importance of smaller prey species relative to elsewhere in its range (Zielinski et al. 1999). Throughout most of its range, snowshoe hare and porcupine are important components of the fisher's diet (Bowman et al. 2006). The southern Sierra Nevada, however, is not within the range of the snowshoe hare and the porcupine currently occurs only at very low densities (Zielinski et al. 1999). Both prey items are present in the Klamath-North Coast region, though not abundant, but Golightly et al. (2006) reported that fisher there did not extensively use porcupines or members of the Leporidae family. Although mammals were still the most frequent prey found in fisher scat from the southern Sierra, reptiles, especially the alligator lizard *Elgaria*, constituted a major prey item, occurring in 20.4 percent of all observed scat and 37.7 percent of scat collected in spring (Zielinski et al. 1999). Similarly, reptiles were found to be an important prey item for fishers in Northern California (24.5 percent frequency of occurrence in scat; Golightly et al. 2006), particularly in the interior regions, but elsewhere in North America they constitute a very minor portion of the fisher's diet (<1 percent) (Zielinski et al. 1999). Also unique to the southern Sierra Nevada and northern California, fishers were found to potentially feed on hypogeous fungi (false truffles) (Grenfell and Fasenfest 1979, Zielinski et al. 1999). Commenting on the unique diet of the fisher in the Sierra Nevada, Zielinski et al. (1999) conclude:

> "As a reputed habitat specialist, it may be adaptive for fishers to consider many of the other species with which they occur as potential foods. Perhaps this is the reason that fishers are capable of finding, capturing, and eating so many of the species that occur in, or near, late-seral conifer forests in the Sierra Nevada."

Zielinski et al. (1999) found slight variation in diet with season. Mammals, in particular deer carrion, were consumed most in winter, presumably when other prey were hibernating. Predictably, fruit were eaten more commonly in autumn and winter when they are typically available. No differences were found in diet between males and females, despite significant sexual dimorphism.

Zielinski and Duncan (2004) postulated that the wide range of relatively small prey items in the diet of Pacific fishers in the southern Sierra Nevada may be explained by either the low occurrence of relatively large prey such as lagomorphs and porcupines, or by the high diversity of food items available in the region compared with other boreal forests where fishers previously have been studied. No studies are available correlating reproductive and survival rates with size and species of prey items consumed. This information may be important because the elimination of the porcupine – a large prey species favored by the fisher in Canada and the eastern U.S. – from much of the range of the fisher in California may have had an impact on fisher demography.

IV. Hunting Behavior

Studies of fisher foraging behavior are limited to the eastern United States (Raine 1987, Arthur and Krohn 1991, Powell 1993). It is unknown to what extent these studies can be generalized to the Pacific fisher in California, where different prey species are available. Based on observations of fisher tracks in the winter, Powell (1993) determined that fishers in Michigan travel in straight lines to patches of high prey density and then forage in a "zig zag" pattern, changing direction frequently. These changes in direction are not random, as fishers appear to purposefully investigate potential prey hiding places, such as hollow logs, piles of forest litter, or root-balls (Raine 1987, Powell 1993). This behavior was most often exhibited by fishers when hunting snowshoe hares, but also when hunting other small mammals (Powell 1993). Fishers rarely chase prey for long distances, instead prey are caught directly after they are flushed. Fishers do not pounce on small mammals with their paws like canids. Prey is killed with a bite to the back of the neck or head. When killing hares, fishers sometimes wrap their body around them and hold on with their

back legs (Powell 1993). Fishers often cache food. When feeding on deer carcasses, fishers often will find a resting den nearby and repeatedly return to the carcass to feed.

Although fishers will dig holes in the snow to find prey, they exhibit far less subnivean activity than their close relative the American marten (Raine 1987). Fishers are known to occasionally forage in trees (Raine 1987, Powell 1993). Fishers are active both in the day and night with peak activity occurring near sunset and sunrise (Arthur and Krohn 1991, Powell 1993). Activity periods typically last from two to five hours (Powell 1993). Fishers hunt exclusively in forested habitats and generally avoid openings. Deep, light snow and thin crusts restrict the movements of the fishers, and the animals will hunt in habitats in which they can travel most easily rather than habitats that have the most prey (Raine 1987). Thus, the distribution of deep snow may limit distribution of fisher, and might result in decreased reproductive success as well as decreased success of reintroduction efforts (Powell and Zielinski 1994).

V. Reproduction and Growth

The breeding season for the fisher begins in late February and lasts until mid-April, although some births occur as late as May (Frost et al. 1997). The testes of males begin to enlarge in early March and most males are producing sperm by mid-March (Powell 1993, Frost et al. 1997). Females come into estrus in early April three to nine days after parturition. Except during the breeding season, fishers are solitary animals. Beginning in March, males are more active and roam beyond the limits of their territories in search of females (Arthur and Krohn 1991, Powell 1993). As males cross territories, there is sometimes intra-specific aggression with several researchers noting scars that they believed resulted from conflict with other male fishers (Leonard 1986, Powell 1993). Mate searching is likely assisted by marking of elevated objects, such as rocks and stumps, with urine, feces and musk, by both sexes (Leonard 1986, Powell 1993). Fishers are likely polygamous and may be polyandrous (Powell 1993). Courtship is often prolonged, lasting anywhere from one to seven hours, and involves tail flagging, chasing, and vocalization, mostly on the part of the female (Powell 1993). If the female is not receptive, she will be aggressive towards the male. Ovulation may be stimulated by copulation (Frost et al. 1997).

Gestation period ranged from 338 to 358 days in captive fishers, but implantation of the blastocyst is delayed approximately nine months (Frost et al. 1997) and may correlate with increasing photoperiod (Powell 1993). During that time, embryonic development is arrested (Frost et al. 1997). Following implantation, the blastocyst resumes growing for around 40 days until birth (Frost et al. 1997). Parturition thus occurs nearly one year later and just prior to mating. Arthur and Krohn (1991) and Powell (1993) speculate that this system allows adults to breed in a time when it is energetically efficient, while still giving kits adequate time to develop before winter. Raised entirely by the female, kits are altricial with closed eyes and ears (Powell and Zielinski 1994). By two weeks, light silver-gray hair covers the body and by 3 weeks they are brown (Powell and Zielinski 1994). Kits are entirely dependent upon their mother's milk until 8-10 weeks old, and by ten weeks the kits wean (Powell 1993, Powell and Zielinski 1994). The mother becomes increasingly active as kits grow in order to provide enough food (Arthur and Krohn 1991, Powell 1993). After about four months, the mother begins to show aggression towards kits and the kits begin killing their own prey; by one year kits will have developed their own home ranges (Powell 1993, Powell and Zielinski 1994). Based on field observation and microsatellite genetic analysis, Aubry and Lewis (2003) found evidence suggesting that only juvenile male fishers disperse long distances, which if true, has a direct bearing on the rate at which the fisher may be able to colonize formally occupied areas within its historic range.

Fishers have a low annual reproductive capacity. Females breed at the end of their first year, but because of delayed implantation do not produce a litter until their second year. One-year-old males are capable of breeding, but some have questioned whether they are effective breeders (see Powell 1993). Litter sizes generally range from one to four kits, but can be as high as five or six in rare cases (Powell 1993). Not all fishers produce young every year. Truex et al. (1998) documented that of the females in their study area in the southern Sierra Nevada only about 50-60 percent successfully gave birth to young. In their study area on the North Coast, however, 73 percent of females gave birth to young in 1995, but only 14 percent (one of seven) did so in 1996, indicating fisher reproductive rates may fluctuate widely.

VI. Survivorship and Mortality

a. Survival Rates

Truex et al. (1998) reported annual survival rates of Pacific fishers in three study areas in California: the Six Rivers National Forest in the North Coast Ranges, the Shasta-Trinity National Forest in the eastern Klamath Mountains, and the Sequoia National Forest in the southern Sierra Nevada range. Animals were radio-collared and followed for several years, and survival rates were estimated (1) with an index comparing individual fates to the total time all individuals were monitored, (2) by calculating the proportion of individuals living from one year to the next, and (3) by calculating Kaplan-Meier survival estimates for the southern Sierra Nevada study area. For animals with known fates, the North Coast Ranges area had the lowest relative survival index, with only 50 percent of individuals surviving over 8.3 combined-animal monitoring years. In contrast, 35 percent of individuals in the Southern Sierra study area survived over 19.3 monitoring years, and 50 percent of individuals in the Klamath study area survived over 15.7 monitoring years. However, if animals with unknown fates were included and presumed to be alive when calculating relative survival rates, the survival index was highest for the North Coast, intermediate for the Eastern Klamath, and lowest for the Southern Sierra. When annual survival estimates were pooled across years for each study area, overall survival was lowest for the Southern Sierra and highest for the North Coast.

Annual survival rates ranged from 61.2 percent, 72.9 percent, and 83.8 percent for females, and 73.3 percent, 85.5 percent, and 83.8 percent for males for the Southern Sierra, Eastern Klamath, and North Coast, respectively. Male survival rates were higher than for females. For the Southern Sierra study area, Kaplan-Meier survival rates for two time periods were 0.57 (95% CI = 0.25-0.89) and 0.60 (95% CI = 0.24-0.96) for females and 0.86 (95% CI = 0.45-1.0) and 0.71 (95% CI = 0.38-1.0) for males. Table 1 below summarizes estimates of survival rates in the three study areas. On the Eastern Klamath and Southern Sierra study areas, female survival was lower than male survival, whereas survival was equal for both sexes on the North Coast study area. Of particular concern is the relatively low survival rate of females in the Southern Sierra, an extremely small, geographically isolated population at serious risk of extirpation.

Table 1. Annual survival rates for Pacific fisher from 1994-1996 as documented by Truex et al. (1998). Estimates based on proportion of radio-collared individuals surviving one year to the next, and Kaplan-Meier (95% Confidence Interval) estimates for animals in the southern Sierra Nevada.

Estimation Method	North Coast	Eastern Klamath	Southern Sierra
Annual Proportion Surviving			
Females	83.8%	72.9%	61.2%
Males	83.8%	85.5%	73.3%
Kaplan-Meier			
Females: 1994-1995			57% (0.25-0.89)
Females: 1995-1996			60% (0.24-0.96)
Males: 1994-1995			0.86% (0.45-1.0)
Males: 1995-1996			0.71% (0.38-1.0)

Recent research at the Hoopa Valley reservation has documented an overall decreasing survivorship of females that has changed the sex ratio of the population (Nichol 2006, Hoopa demographic monitoring report; undated). Adult survival on the Hoopa reservation was estimated using program MARK; mean annual survival rates were 0.56 (95% CI 0.452-0.659) for both sexes combined from 1996 to 1998 (Hoopa demographic monitoring report; undated). Female survival was 0.62 (95% CI 0.493-0.725) and male survival was 0.38 (95% CI 0.203-0.598) (Hoopa demographic monitoring report; undated). Survival estimates in 2006 were lower than survival estimates from the 1990s (Coastal Martes Working Group notes; 11 August 2006 field trip to Hoopa reservation). Sex ratio (non-juvenile) was 1 male per 2.4 females in a study conducted in 1997-1998; in 2006 the sex ratio had increased to 1 male per 0.7 females. In 2006, sex ratio of juveniles was 1:1 but became heavily male-biased by about 9 months (Coastal Martes Working Group notes; 11 August 2006 field trip to Hoopa reservation). Decreased survivorship for females and sex ratios favoring males and is a serious issue of concern regarding the long-term survival of the overall fisher population in California.

b. Mortality Factors

Powell (1993) estimated that ten years may be the upper age limit for fishers. Predation and human-caused death appear to be the most important sources of mortality (Powell and Zielinski 1994, Truex et al. 1998). On the Hoopa reservation in 2007, 3 of 12 denning females were killed by predators (Coastal Martes Working Group notes; 14 June 2007). Of 16 mortalities recorded by Truex et al. (1998) where they were able to speculate a cause of death, nine were suspected to be from predation and five were suspected to be human caused, including two vehicle collisions, two cases where the collar was cut (indicating poaching), and one fisher that became trapped in a water tank and died of exposure and/or starvation. Folliard (1997) found the skeletons of eight fishers in a water tank in northwestern California, indicating that such "accidental traps" may be a substantial source of mortality. Where trapping is legal, it is a significant source of mortality. Krohn et al. (1994), for example, found that over a five-year period trapping was responsible for 94 percent of all mortality for a population of the fisher in Maine.

Vehicle collisions appear to be a particularly significant human cause of mortality for the Pacific fisher in California. Two radio-collared males in the Klamath population were killed by automobiles during a study in the 1990s (Truex et al. 1998). In Yosemite National Park, four fishers were found killed by automobiles between 1992 and 1998 (Chow personal communication to N. Greenwald). Zielinski et al. (1995 at p. 110) reported that two road-killed fishers were recovered from 1991 to 1994 in the Sierra National Forest, and that road-killed fishers are "relatively common" in the Sequoia National Forest, according to S. Anderson of the USDA Forest Service.

VII. Habitat Requirements

Studies on the habitat use of fishers in the western United States demonstrate that the fisher is strongly associated with mature and late successional forests (Aubry and Houston 1992, Buck et al. 1994, Dark 1997, Jones and Garton 1994, Mazzoni 2002, Powell and Zielinski 1994, Seglund 1995, Truex et al. 1998, Carroll et al. 1999, Campbell 2004, Zielinski et al. 2004a, 2004b). In particular, fishers are generally found in stands with high canopy closure, large trees and snags, large woody debris, large hardwoods, and multiple canopy layers. Based on an extensive review of existing studies, Buskirk and Powell (1994) concluded:

> "Do American martens and fishers require particular forest types—for example, old-growth conifers—for survival? We think they do. Ecological dependency has been defined in terms of viability of populations, and distributional losses of marten and fisher populations in response to habitat change provide evidence that populations require the habitats that individuals, especially reproductive adults, behaviorally prefer."

The following sections summarize results of existing studies of fisher habitat use while resting, denning, and foraging in the western United States, with particular emphasis on California.

a. Denning and Resting Habitat

Denning and resting habitat is defined as the physical structures that are used by fishers for giving birth and raising kits (denning) and for resting between foraging bouts (resting), as well as the forest characteristics immediately surrounding these structures. Female fishers give birth in natal dens and subsequently move their kits to one or several maternal dens over the breeding season (Nichol 2006). All natal and maternal dens in California's fisher populations have been found in tree cavities, including one in a conifer log (Truex et al. 1998, see citations in Nichol 2006). Female fishers have been observed at resting sites away from natal dens during the breeding season (Truex et al. 1998). Fishers have at least one daily resting occasion, and usually use a different resting structure for each occasion (Zielinski et al. 2004a). Individuals appear to remember rest sites, as they have been witnessed approaching sites directly (Powell and Zielinski 1994), although Zielinski et al. (2004a) found that only 66 of 599 (11 percent) resting structures identified during a radio telemetry study in the Northern Coast Ranges and Southern Sierra Nevada were re-used. Pacific fishers have been documented utilizing tree cavities, platforms, squirrel and raptor nests, logs, rock and brush piles, and even holes in the ground as resting structures (Zielinski et al. 2004a).

Attributes of Denning Sites – Truex et al. (1998) defined natal and maternal dens as rest sites where kits were observed prior to juvenile dispersal. Females exhibit strong selectivity for dens, because

they must find a suitable cavity with an entrance hole small enough to control access by males and to protect their young from predators (Zielinski et al. 2004a). Three studies have described attributes of natal and maternal denning structures for fishers in California. All dens were in cavities of very large live or dead conifer or hardwood trees, and all were standing except one white fir (*Abies concolor*) log (Table 2).

Table 2. Natal and maternal denning sites of Pacific fishers (adapted from Nichol 2006 and Truex et al. 1998).

Study Author(s)	Location	Tree species used for denning*	Average DBH of trees and/or snags used for denning (cm)
Truex et al. 1998	North Coast, eastern Klamath, and southern Sierra Nevada	NC: 1 CADE; 2 PSME; 1 QUKE, 2 ABCO (1 was log) EK: 1 PIPO; 1 QUKE; 2 QUCH; 1 PSME SSN: 3 ABCO; 2 QUKE	NC: 116.8 for conifers; 53 for hardwood EK: 78 for conifer, 60 for hardwoods SSN: 115 for conifers; 63 for hardwoods
Higley and Matthews 2006	Hoopa Valley reservation, northern CA	25 LIDE; 10 PSME; 9 QUKE; 1 CULA; 1 PILA; 1 ARME	76 to 137
Self and Callas 2006	Sierra Pacific Industries lands (location not specified, presumed northern CA)	6 QUKE; 2 QUCH; 1 PSME	47.5 (*Quercus* spp.) to 166.4 (PSME)

*CADE=Incense-cedar, PSME=Douglas-fir, QUKE=Black oak, ABCO=White fir, PIPO=Ponderosa pine, QUCH=live oak LIDE=Tanoak, CULA=Port Orford-cedar, PILA=sugar pine, ARME=Pacific madrone,

Hardwood trees with dens appear to be smaller on average than conifer trees with dens. Truex et al. (1998) reported that of a total of 19 denning sites, eight were in live hardwood trees, six were in live conifer trees, four were in conifer snags, and one was in a conifer log. Overall the average diameter at breast height (DBH) was 114.8 cm for conifers and 62.5 cm for hardwoods. The minimum sized conifer den tree was an 82-cm live white fir, while minimum sized hardwoods were in 40-cm live black oak and live oak. Higley and Matthews (2006) reported the average DBH for birth and pre-weaning natal den trees was 59-113 cm for hardwoods and 102-137 cm for four conifer species, and Self and Callas (2006) reported the DBH of a Douglas-fir snag den site was 166.4 cm (no information was available on average DBH of hardwood tree den sites). Interestingly, Weir and Harestad (2003) found that the average DBH of black cottonwoods in British Columbia used as fisher maternal dens was 103.1 cm, which is larger than the hardwood tree den sites reported in California.

Truex et al. (1998) described habitat conditions surrounding natal and maternal den trees. Canopy closure ranged from 70 to 100 percent, and basal area ranged from 18.3 m^2/ha (at the eastern Klamath site, around a black oak den) to 166.3 m^2/ha (around a den in a white fir snag at the North Coast site). Average basal area was 75.6 m^2/ha for the North Coast sites, 62.6 m^2/ha on the Southern Sierra site, and 59.8 m^2/ha on the Eastern Klamath (Truex et al. 1998).

Attributes of Resting Sites – Resting structures protect fishers from inclement weather conditions and predators. Therefore "choosing a resting site may be among the most important choices made by fishers outside the breeding season," (Zielinski et al. 2004a at p. 476). Using radio-telemetry, Truex et al. (1998) and Zielinski et al. (2004a) found that approximately 75 percent of resting structures in the North Coast, the Eastern Klamath, and the Southern Sierra were in standing trees, and most of these were >100-cm DBH, with live trees constituting 46.4 percent of structures. These trees were significantly larger on average than the trees that were available within their home ranges (Zielinski et al. 2005a). Over 40 percent of rest sites in the Southern Sierra were in hardwoods, which was nearly twice the use of hardwoods in northern California. The authors postulated that oak ecosystems provide high-quality food for fisher prey. Mazzoni (2002) also found that black oaks and white firs were preferred resting sites, along with ponderosa pine, in the southern Sierra. While male and female fishers rested most often in trees in both regions, Zielinski et al. (2004a) and Truex et al. (1998) reported greater use of rock piles and other ground cavities in the Southern Sierra compared to Northern California. Furthermore, males used platforms more often than females, while females used snags more frequently than males. In sum, fishers most frequently rested in live trees, followed in order of importance by snags, platforms, and logs. Rock piles, subnivean sites and holes in the ground were utilized less frequently. Douglas-fir was by far the most

common species used for resting in both northern California sites, whereas oaks and true firs were most commonly used in the southern Sierra.

The average DBH of trees and snags used by fishers for resting in numerous studies in California was 79.7 to 118.5 cm for conifers and 67.1 to 103.2 cm for hardwoods (Table 3). Approximately 80 percent of all logs used as rest sites by fishers were over 76 cm DBH. Other studies from the West Coast have found similar results (Table 3). Appropriate rest sites must be widely distributed throughout home ranges of fishers because they are typically used for only one rest or sleep (Powell and Zielinski 1994, Truex et al. 1998, Zielinski et al. 2004a).

Table 3. Average diameter of trees used for resting by Pacific fishers in several studies.

Study Author	Location	Average DBH of trees and/or snags used for resting (cm)
Buck et al. 1983	Northern California	114.3
Truex et al. 1998	North CA Coast, eastern Klamath, and southern Sierra Nevada	98.2 for conifers; 67.1 for hardwoods
Higley 1998	Hoopa Valley reservation, northern CA	110 for conifers; 74.6 for hardwoods
Mazzoni 2002	Southern Sierra Nevada	95 for snags; 116 for live trees
Weir and Harestad 2003	Southern British Columbia	78.7 for conifers; 103.2 for hardwoods
Zielinski et al. 2004a	North CA Coast, Southern Sierra Nevada	118.5 for conifers; 69 for hardwoods

While the resting structure itself is assumed to be a primary attractant for a fisher, a number of environmental features in the surrounding habitat are associated with the selection of a roosting location (Zielinski et al. 2004a). Resting sites are typically located within stands dominated by late-successional forest characteristics, such as large trees and snags, coarse woody-debris, high canopy closure, and multiple canopy layers (Truex et al. 1998, Zielinski et al. 2004a). Truex et al. (1998) documented high mean canopy closure and high mean DBH of the four largest trees in stands surrounding fisher rest sites on three study areas in California (Table 4).

Table 4. Attributes of stands surrounding Pacific fisher rest sites as documented by Truex et al. (1998).

Stand Attribute	North Coast	Southern Sierra	Eastern Klamath
Mean canopy closure	93.9%	92.5%	88.2%
Mean DBH of the four largest trees	118.3 cm	89.6 cm	46.2 cm

Zielinski et al. (2004a) concluded that canopy cover, DBH, and slope are the most significant variables explaining the differences between fisher resting and random sites. Resting sites had significantly larger maximum DBH, higher average canopy closure and shrub canopy closure, more large snags, and steeper slopes than random sites. Conifers and hardwoods were smallest at random sites, larger in stands surrounding resting sites, and largest when used as resting structures (Zielinski et al. 2004a). Similarly, Mazzoni (2002) found that canopy cover, tree basal area, distance from water, and crown volume were the most significant indicators of fisher rest sites in the southern Sierra. In northern California, the presence of large conifer snags was also important, while in the southern Sierra, the presence of water and hardwoods was significant (Zielinski et al. 2004a). Similarly, Dark (1997) found that stands surrounding fisher rest sites have greater amounts of 50-75 percent canopy cover, fewer disjunct core areas, and more Douglas-fir than areas where fishers were not detected, and Seglund (1995) found that the fisher used rest sites with greater basal area per square meter, a higher percentage of dead and down woody debris, a greater average DBH of the four largest trees, and a greater number of vegetation layers (multiple canopy layers) on plots surrounding rest sites compared with sites where fishers were not detected. These characteristics are all typical of late-successional forests.

The Pacific fisher is probably associated with late-successional forest conditions because these stands contain the large trees, snags, and logs used by fishers as rest or den sites (Powell and Zielinski

1994, Truex et al. 1998, Zielinski et al. 2004a). Cavities in large old-growth trees and high canopy cover surrounding these structures likely protect fishers from hot, dry weather conditions typical of forests in California (Zielinski et al. 2004a). As outlined above, fishers generally rest in or on live trees, snags, or logs with cavities, broken tops, large limbs, mistletoe brooms, or platforms made by raptors or squirrels. These characteristics are usually only found on large, old trees. Commenting on the significance of use of large trees and snags for resting and denning to the conservation of the fisher and its habitat, Powell and Zielinski (1994) concluded:

> "Large physical structures (live trees, snags, and logs) are the most frequent fisher rest sites, and these structures occur most commonly in late-successional forests. Until it is understood how these structures are used and can be managed outside their natural ecological context, the maintenance of late-successional forests will be important for the conservation of fishers."

b. Foraging Habitat

Foraging habitat requirements are difficult to study because it is harder to locate moving animals and because once they are located it is difficult to determine whether or not they are simply traveling through an area or actively hunting. Despite such limitations, habitat characteristics surrounding baited track plate stations where fishers have been detected are often used as a proxy to describe foraging habitat (Powell and Zielinski 1994, Seglund 1995, Aubry et al. 1996, Carroll et al. 1999, Zielinski 1999, Dark 1997, Mazzoni 2002, Weir and Harestad 2003, Campbell 2004). Presumed foraging habitat, similar to resting and denning habitat, is often typified by characteristics associated with mature and late-successional forests (Dark 1997, Jones and Garton 1994, Zielinski 1999). Zielinski (1999) documented that fishers on the North Coast of California foraged in stands with greater basal area, a wider range of tree sizes (based on greater DBH standard deviation; this factor suggests presence of multiple canopy layers), and significantly higher canopy closure (average of 91.7 percent for sites with detections compared to 79.0 percent sites without detections) than stands where fishers were not found, and that fishers in the southern Sierra foraged in stands with higher canopy closure of trees and shrubs than stands where fishers were not found. Dark (1997) found no differences between fisher resting locations and track-plate locations, potentially indicating that fishers use late-successional habitats for all activities, including resting, traveling, and foraging. Campbell (2004) reported that microhabitats where fishers were present at baited stations in the Sierra Nevada tended to have larger conifer and hardwood trees, steeper slopes, more shrub cover, and fewer roads than areas where no fishers were detected. At the landscape level, sample units within the fisher detection area were negatively associated with precipitation, road density, and discontinuity of habitat (Campbell 2004). In contrast to Campbell (2004), Weir and Harestad (2003), in their study of radio-collared fishers in British Columbia, found that fishers avoided stands with >80 percent closure of the low shrub layer. They hypothesized that very high shrub cover may negatively affect hunting success.

Conversely, Klug (1997) found no difference in age between stands where fishers were detected at track plate stations and where fishers were not detected, and thus found no relationship between fishers and late-successional forests in his study on private timber lands in coastal northern California. However, Klug noted that there was very little old-growth in his study area (<2 percent) and that track plate surveys are unable to detect whether or not fishers are using the area incidentally or regularly. Powell and Zielinski (1994) concluded:

> "While some recent work in northern California indicates that fishers are detected in second-growth forests and in areas with sparse overhead canopy, it is not known whether these habitats are used transiently or are the basis of stable home ranges. It is unlikely that early and mid-successional forests, especially those that have resulted from timber harvest will provide the same prey resources, rest sites and den sites as more mature forests."

A number of studies have shown that fishers avoid areas with little forest cover or significant human disturbance and prefer large areas of contiguous interior forest (Dark 1997, Jones and Garton 1994, Powell 1993, Rosenberg and Raphael 1986, Carroll et al. 1999, Seglund 1995, Weir and Harestad 2003). Seglund (1995) found that a majority of fisher rest sites (83 percent) were further than 100 m from human disturbance and Dark (1997) documented that fishers used and rested in areas with less habitat fragmentation and less human activity. Rosenberg and Raphael (1986) found that presence of fishers was highly correlated with stand insularity and that they "decreased sharply in frequency of occurrence in stands <100 ha." Lastly, Freel (1991) determined, based on a review of studies, that high-quality habitat

was characterized by a road density less than one half mile to every square mile. Fishers probably avoid open areas because they are more vulnerable to potential predators without forest cover and because in winter open areas have deeper snow, which is believed to make travel inefficient (Krohn et al. 1997, Powell 1993, Weir and Harestad 2003). Conversely, fishers are probably associated with habitat with contiguous forest cover because this is where they find sufficient available prey and suitable resting and denning sites (Powell 1993, Powell and Zielinski 1994). The U.S. Fish and Wildlife Service's 12-month finding for a petition to list the west coast distinct population segment of the fisher; Federal Register April 8, 2004 (at p. 18774), cites literature making clear the relationship between fisher and closed canopy conditions:

> "The fisher's need for overhead cover is very well-documented. Many researchers report that fishers select stands with continuous canopy cover to provide security cover from predators... Fishers may use forest patches with large trees because the overstory closure increases snow interception... Forested areas with higher density overhead cover provide the fisher increased protection from predation and lower the energetic costs of traveling between foraging sites. Fishers probably avoid open areas because in winter open areas have deeper, less supportive snow which inhibits travel ... and because they are more vulnerable to potential predators without forest cover... Furthermore, preferred prey species may be more abundant or vulnerable in areas with higher canopy closure..."

Several studies have shown that fishers are associated with riparian areas (Aubry and Houston 1992, Dark 1997, Seglund 1995, Zielinski 1999, Zielinski et al. 2004a). For example, Aubry and Houston (1992) noted that many of the past sightings of the fisher in Washington State were in riparian areas or wetlands. This is probably because riparian forests are in some cases protected from logging and are generally more productive, thus having the dense canopy closure, large trees, and general structural complexity associated with fisher habitat (Dark 1997). Zielinski et al (2004a) found that proximity to water was an important variable in the resting site selection by southern Sierran fishers, possibly because fishers prefer mesic sites in this relatively dry habitat.

In sum, fishers in the western United States are habitat specialists associated with forests exhibiting late-successional characteristics, such as an abundance of large trees, snags, and logs (>100 cm DBH), multiple canopy layers, high canopy closure, and few openings (Dark 1997, Freel 1991, Powell and Zielinski 1994, Seglund 1995, Truex et al. 1998, Carroll et al. 1999, Mazzoni 2002, Zielinski et al. 2004a). In combination with their avoidance of human disturbance, this association makes the fisher highly sensitive to anthropogenic habitat loss and fragmentation related to logging, development, and other factors. Based on a survey of fisher distribution in Washington and a review of other studies, Aubry and Houston (1992) concluded:

> "We predict that available habitat for fishers would be enhanced by minimizing forest fragmentation, maintaining high forest-floor structural diversity, preserving snags and live trees with dead tops, and protecting swamps and other forested wetlands."

Indeed, elimination of late-successional forest characteristics from large portions of the Sierra Nevada and Pacific Northwest (Aubry and Houston 1992, McKelvey and Johnson 1992, Morrison et al. 1991, Franklin and Fite-Kauffman 1996) has probably contributed to the significant diminution of the fisher's historic range on the West Coast (Lewis and Stinson 1998).

c. Home Range

Fishers have large home ranges, with ranges of males considerably larger than those of females (Kelly 1977, Buck et al. 1983, Truex et al. 1998, Zielinski et al. 2004b). Male and female home-range sizes in the southern Sierra, based on minimum convex polygons, averaged 2,998 ha and 528 ha, respectively, in one study (Zielinski et al. 2004b), and 2,194 ha and 1,192 ha, respectively, in another study (Mazzoni 2002). Average home-range sizes in northern California were 5,807 has for males and 1,498 ha for females (Zielinski et al. 2004b). Home-range size likely varies with quality of habitat. Truex et al. (1998) compared fisher home-range sizes in three study areas and found that they were largest in the eastern Klamath where habitat quality was generally considered poor. They concluded:

> "Individuals are expected to use larger areas in poorer quality habitat and therefore to exist at lower densities. Both of these indices support the relatively lower quality of habitat on the eastern Klamath study area than the North Coast or Southern Sierra Studies."

High canopy closure appears to be an important feature of fisher home ranges. Zielinski et al. (2004b) found that the 66.3 percent of fisher home ranges were comprised of 60-100 percent canopy cover. However, home ranges of females included a larger proportion of the densest canopy closure class (71.1 percent of the home range) than home ranges of males.

Based on a review of eight studies of fisher home-range size, Freel (1991) determined that supporting a reproductive unit of fishers, including the home ranges of one male and two females, would require 2,428 ha (6,000 ac) in high capability habitat with 70-80 percent in mature, closed conifer forest; 3,966 ha (9,800 ac) in moderate capability habitat with 61-80 percent in mature, closed conifer forest; and 4,573 ha (11,300 ac) in low capability habitat with 50-60 percent in mature, closed conifer forest. Carroll et al. (1999) compared fisher locations with habitat variables at the scale of the stand, landscape, and region and found that habitat variables at landscape and regional scales predicted fisher distribution as well as a model incorporating fine-scale habitat attributes, potentially indicating that the fisher may be selecting habitat at the home-range scale or above. At the landscape scale, fisher distribution was strongly associated with landscapes with high levels of tree canopy cover (Carroll et al. 1999).

HISTORICAL AND CURRENT DISTRIBUTION

In California, the fisher historically ranged throughout the Sierra Nevada from the Greenhorn Mountains in northern Kern County to the southern Cascades at Mount Shasta. From there, they ranged west into the North Coast Ranges and Klamath Mountains from Lake and Marin Counties north to the State line (Figure 1 and Grinnell et al. 1937). In the Sierra Nevada, the fisher occurs from roughly 600-2,600 m with occasional sightings up to 3,000 m (Grinnell et al. 1937, Zielinski et al. 1997a). In northern California, fishers are occasionally seen at sea level, but more commonly occur from 600-1,700 m (Grinnell et al. 1937, Zielinski et al. 1997a). The upper elevational limit of the fisher's range generally corresponds with those areas that receive significant winter snowfall, where it is believed fishers are not able to travel efficiently (Krohn et al. 1997). Throughout California, fishers occur in mixed conifer, Douglas-fir, and ponderosa pine forest types (Zielinski et al. 1997a, Zielinski et al. 2000). Based on systematic surveys conducted from 1996-1999 in forested areas of northwestern California, the Sierra Nevada and southern Cascades, Zielinski et al. (2000) determined that of all fisher detections roughly 45 percent were in the pine type, 18 percent were in the mixed conifer type, 11 percent were in the true fir type, and 25 percent were in the Douglas-fir type, according to CWHR habitat types. In addition, Beyer and Golightly (1996) detected fishers at track plate stations in the coast redwood zone, but detection ratios were lower than in other habitats. Fishers, however, were commonly detected in mixed redwood/Douglas fir forest and coastal forests comprised of Sitka spruce, red alder, and occasional coast redwood (Beyer and Golightly 1996).

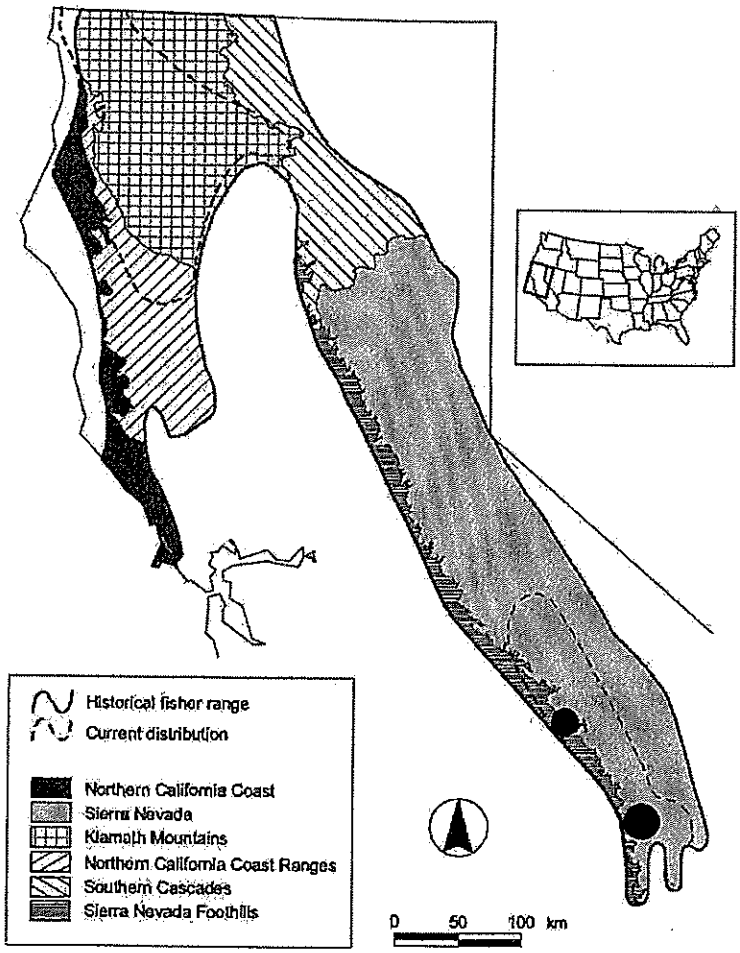


Figure 1. Map of the fisher's historic and current range in North America from Zielinski et al. (2005a).

The fisher's range has declined to roughly 50 percent of its historic range in California (Zielinski et al. 1997a, Zielinski et al. 2005a). In particular, researchers have failed to detect fishers north of Yosemite Park during extensive surveys using remote cameras and track plates, suggesting that the fisher is extirpated or occurs at extremely low densities in the central and northern Sierra Nevada (Figure 2; Truex et al. 1998, Zielinski et al. 1997b, 2000, 2005a, Campbell 2004). This has effectively isolated fishers in the southern Sierra Nevada from fishers in northern California by a distance of roughly 430 km (Lamberson et al. 2000, Zielinski et al. 2005a), which is more than four times greater than the observed maximum dispersal distance for fisher of 100 km (Arthur et al. 1993, York 1996).

The Sierra Nevada Forest Plan Accomplishment Monitoring Report for 2005 reported annual occupancy rates were consistently higher on the Sequoia National Forest (33.3-41.1 percent annual occupancy) than the Sierra National Forest (14.5-22.7 percent annual occupancy), and that detection rates were similar over four years: in 2002 the detection rate was 0.268, in 2003 it was 0.234, in 2004 it was 0.238, and in 2005 it was 0.248. In the last decade, detections of fisher were most common in the extreme southern Sierra, especially in Tulare County where in one study 26 of the 30 sampling units with fisher detections occurred (Zielinski et al. 2005a; Figure 2). In fact, Zielinski et al. (2005a at p. 1395) noted of all the carnivore species detected during their surveys, "the distribution of the fisher appears to have changed more than any of the species." Importantly, Zielinski et al. (2005a) further state that it is likely that the fisher population was *already reduced* by the time Grinnell et al. (1937) assessed the distribution of the species, due to a combination of extensive logging of habitat and the high price for fisher pelts. Zielinski et al. (2005a at p. 1403) stated that "the paucity of fisher records in the southern Cascades and northern Sierra Nevada may be because fishers, coveted by trappers, had already been trapped out by the time their status was first assessed." Thus, the historic fisher population was likely larger than what is considered baseline from Grinnell et al. (1937), and may not represent the distribution of fishers prior to European settlement of California. Campbell et al. (2004) and Zielinski et al. (2005a) also found that two carnivore species sympatric with the fisher are apparently extinct throughout the Sierra Nevada, and possibly the entire state: the wolverine (*Gulo gulo*) and the Sierra Nevada red fox (*Vulpes vulpes*).

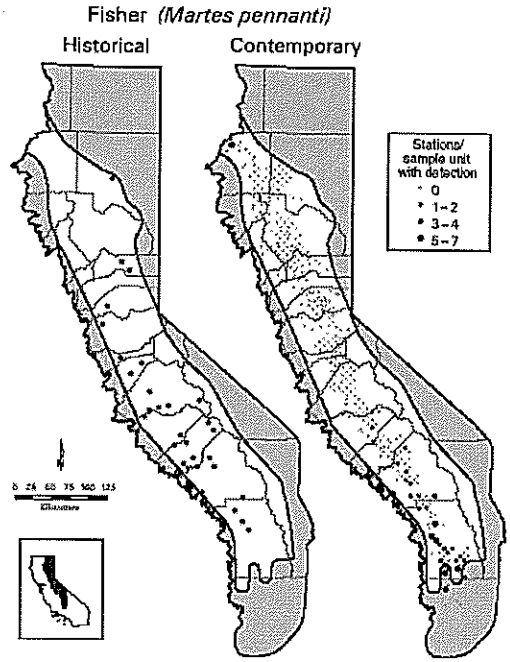


Figure 2. Distribution of historical records (left) and contemporary survey data from 1992-2002 (right) for the Pacific fisher in the Sierra Nevada. Historical range indicated by bold black line; gray dots on contemporary map are sample units where no fishers were detected; black dots represent stations with detections. From Zielinski et al. 2006.

Loss of the fisher from the northern Sierra Nevada was likely caused by a combination of many factors, including more than a century of logging with concurrent road building, rapid population growth, development and trapping prior to 1946 (Duane 1996a, McKelvey and Johnson 1992, Lamberson et al. 2000, Campbell 2004, Zielinski et al. 2005a). Compared with the American marten (*Martes Americana*), a congeneric, late-successional forest specialist, the fisher occurs at lower elevations putting it in greater proximity to human development and forest-altering activities (Zielinski et al. 2005a). Truex et al. (1998) conclude that "for all intents and purposes the southern Sierra is a demographically closed population." This conclusion is supported by the recent genetic work by Wisely et al. (2004), which suggests that fishers along the Pacific coast have the highest reported level of genetic structure in a mammalian carnivore. Populations from Northern California and the southern Sierra Nevada are highly differentiated, and there is little migration among populations from north to south (Wisely et al. 2004). In addition, the population south of the Kings River is thought to be almost completely isolated from populations to the north of the river (Wisely et al. 2004). In part because of its extreme isolation, the southern Sierra Nevada population is believed to be at substantial risk of extinction (Truex et al. 1998, Lamberson et al. 2000).

The distribution of fishers relative to potentially competing carnivore species is an important consideration for the recovery of the fisher into areas from which it has been extirpated. The fisher may exhibit significant ecological overlap with competing carnivores due to its large home-range size and generalist diet (Campbell 2004). In an intensive survey of mammalian carnivores in the central and southern Sierra Nevada conducted from 1996-1998, Campbell (2004) found that striped skunk and gray fox – two species similar in size to fishers – were detected much less frequently in the area where fishers persist, and much more frequently in the central Sierra Nevada where fishers have been extirpated. The author stated (at p.41) that "areas where mature forest is less abundant would tend to favor more generalist species such as the striped skunk, opossum, and gray fox, all of which occur more frequently at sites in the northern portion of the study area where fishers are absent." Campbell also cautioned that competition with resident carnivores, together with the degradation of late-seral forests due to logging, roads, and development, may be hindering recolonization of the northern Sierra Nevada by fishers.

In northwestern California, the range of the Pacific fisher has contracted northward and now extends only as far south as northern Mendocino County (Zielinski et al. 2005a). In 2000, surveys conducted on the Mendocino National Forest in conjunction with planned timber harvest activities found fishers at a northern site but not at a southern site (Weinberg and Paul 2007). The surveyors speculated that the differences in occupancy may be due to several factors, such as differences in annual precipitation between sites, or because the southern site may be south of the range of large, contiguous blocks of suitable habitat that occurs at the northern, higher-elevation watersheds of the Mendocino National Forest. Moreover, the southern site contained a popular, heavily-used motocross trail network that may have caused fishers to abandon the area (Weinberg and Paul 2007). Surveys in Jackson State Forest in 2006 found no detections (Coastal Martes Working Group notes; 4 October 2006).

Fishers in California are also almost certainly isolated from the larger continental population. Extensive survey and sighting information strongly indicates that the fisher has been extirpated from extensive portions of Oregon and Washington (Aubry and Houston 1992, Aubry et al. 1996, Lewis and Stinson 1998), isolating the remaining populations in northwestern California, the southern Sierra Nevada, and southern Oregon from those in central British Columbia and the Rocky Mountains by at least 800-1,000 km. Although evidence indicates that scattered individual fishers may occur in Washington, it is unlikely that these individuals could facilitate genetic exchange between remaining fisher populations in California and Oregon and the larger continental population. Microsatellite and mitochondrial DNA studies of fisher populations along the west coast support this assumption (Drew et al. 2003, Aubry and Lewis 2003, Wisely et al. 2004). All California fisher populations are differentiated mitochondrially from each other, and from other populations in southern Oregon and British Columbia (Drew et al 2003). More interestingly, there has been no genetic exchange between the population in Oregon's Siskiyou Mountains and the introduced population in the southern Oregon Cascade mountains (Aubry and Lewis 2003, Wisely et al. 2004), suggesting that there is not enough suitable habitat between these two populations to facilitate dispersal.

ABUNDANCE AND POPULATION TRENDS

Four studies of fisher demography in California have been conducted, including one study of the southern Sierra Nevada population and three of the northern California populations – in the Northern Coastal Range and in the Eastern Klamath (Truex et al. 1998) and on the Hoopa Indian Reservation (Hoopa demographic monitoring report; undated). These studies utilized radio-collared fishers to study reproduction, survival, and habitat use. In addition, the Forest Service began conducting monitoring of fisher populations in the Sierra Nevada in 2002, including intensive sampling on Sierra and Sequoia National Forests designed to monitor population trend, and less intensive sampling at sites in the central and northern Sierra (the area assumed to be unoccupied by fisher) focused on documenting population expansion (USDA 2006). The basic monitoring objective is to detect 20 percent declines in population abundance and habitat across the Sierra Nevada. These Forest Service survey detections were used to generate a population estimate of the southern Sierra population (Spencer et al. 2007). Although these studies have only begun to gain insight into fisher population ecology, preliminary estimates of mortality and survival indicate that remaining Pacific fisher populations, particularly in the southern Sierra, are at significant risk of extinction.

Overall, the abundance of Pacific fisher in the southwestern Oregon-northwestern California population is estimated to be fewer than 750 individuals (Nichol 2006). The southern Sierra Nevada population is estimated to contain about 100 to 500 individuals (Lamberson et al. 2000) with potentially 50 remaining females. Given that the northern California population estimate includes animals in southwestern Oregon as well, the extant Pacific fisher population in California probably numbers a maximum of 1,250 individuals, but could potentially be as low as 850 or less.

I. Southern Sierra Nevada Population

Several factors place the fisher population in the southern Sierra at serious risk of extinction, including isolation, small population size, demographic and environmental stochasticity, low reproductive capacity, and ongoing habitat loss (Truex et al. 1998, Lamberson et al. 2000). As noted above, this population is isolated from others by approximately 430 km and as a result, there is a low probability that it could be rescued through migration of individuals from other populations were it to decline further because of demographic stochasticity, catastrophes, or other factors. Truex et al. (1998) conclude:

> "Recolonization of the central and northern Sierra Nevada may be the only way to prevent fisher extinction in the isolated southern Sierra Nevada population."

Further, without immigration the southern Sierra population may be susceptible to inbreeding depression. Indeed, genetic studies using mitochondrial DNA sequencing and nuclear DNA fingerprinting indicate dangerously low genetic variability in southern Sierra Nevada fishers (Drew et al. 2003, Wisely et al. 2004).

In addition to being isolated, the southern Sierra Nevada population is extremely small, including probably no less than 100 individuals, but almost certainly fewer than 360 (Lamberson et al. 2000, Spencer et al. 2007). Spencer et al. (2007) recently used three habitat-based approaches to generate estimates of fisher population size in the southern Sierra. The first approach was to extrapolate fisher density estimates (derived from ground surveys from one area) over the entire southern Sierra area predicted to be suitable based on habitat models from existing literature. The only available density estimate was from the Kings River Project study area, which documented a total density of 10-13 fishers per 100 km^2. This method generated an estimate of 57-86 adult females and 285-370 total fishers throughout the region south of the Merced River. Another approach used by Spencer et al. (2007) was to use sampling theory to calculate annual fisher occupancy rates from regional surveys, adjusted for detectability and total number of fishers detected at each sample unit, to estimate a total population size. Sampling theory yielded an estimate of 160-250 total adult and subadult fishers in the study area. A third approach taken by Spencer et al. (2007) involved inputting parameters derived from previous fisher population modeling studies into the spatially explicit population model PATCH to estimate carrying capacity (equilibrium population size and distribution) of fishers in occupied areas and to identify potential source, sink, and expansion areas. PATCH combines birth, death, and dispersal rates and territory size with spatially explicit habitat values to model territory occupancy by females over time. This method estimated that the currently occupied habitat areas in the southern Sierra Nevada can support approximately 71-147 adult females. The range for adult

female fishers was based on a minimum number of females at equilibrium using a 1,200-ha territory size, up to the maximum number of females using an 860-ha territory size. Based on a 1:1 sex ratio, Spencer et al. (2007) then estimated a population size of about 142-294 total adult fishers, and accounting for subadult animals provide an approximate estimate of 220-360 total fishers. However, the authors note that a 1:1 sex ratios is potentially too large: research on the Kings River Project study area documented a sex ratio of 4 males:6 females, and Dr. Reginald Barrett estimated that there were likely 2-3 territorial females per male because male territories average about 3 times larger than females and males of polygamous species experience greater mortality than females (Spencer et al. 2007). Spencer et al. (2007 at p. 38-39) noted that "equilibrium population size for fishers in the southern Sierra Nevada south of the Merced River [based on current habitat suitability models] is *no more* than about 294 adults, and all things considered, is more likely in the range of 150 to 250 individuals." Spencer et al. (2007 at p. xxii) concluded that:

> "*the fisher population in the southern Sierra Nevada (ignoring juveniles) is between 160 and 360 total individuals (and probably less than 300). Of these, about 57 to 147 (and probably less than 120) are adult females, which comprise the most important class for sustaining a population.*" Emphasis in original.

The PATCH approach also identified areas that might support important high-quality core habitats, critical landscape linkages, or movement corridors. Potential source habitats were well-distributed in larger, more contiguous areas of high-value habitat, and sink habitats tended to be in more peripheral and isolated habitat areas (Spencer et al. 2007).

Generally, a population size of 500 breeding pairs composed of 2,000-3,000 individuals is considered the absolute minimum to maintain population viability (Lande and Barrowclough 1987, Lande 1993). Populations well below this minimum, like the southern Sierra fisher population, are at risk of extinction solely from demographic and environmental stochasticity, independent of deterministic factors, such as anthropogenic habitat loss. Random fluctuations in gender ratio, fecundity or mortality; inbreeding depression; and/or droughts, cold weather, heavy snow years, and other temporal environmental changes can lead to declines that in small populations result in rapid extinction. These factors present very real threats to the long-term survival of the isolated southern Sierra fisher population (Lamberson et al. 2000). Catastrophes, such as severe storms or disease epidemics, magnify risk of extinction further (Schaffer 1987, Lande 1993). Indeed, Spencer et al. (2007 at p. 41) stated that "given that this small population does not experience immigration from other regions, it is at risk of extirpation by a variety of stochastic influences, and likely needs to grow to avoid extinction."

Although little is known about fisher demography, what is known is a cause for serious concern. Fishers have very low reproductive capacity. After two years of age they generally produce only one to four kits per year and only a portion of all females breed (Powell 1993, Truex et al. 1998, Lamberson et al. 2000). Low fecundity means that fisher populations are slow to recover from population declines, further increasing risk of extinction. Of even greater concern, Truex et al. (1998) documented that adult female fishers in the southern Sierra Nevada have a very low annual survival rate, which from 1994-1996 was 61.2 percent. Of all demographic parameters, female survival has been shown to be the most important single factor determining fisher population stability (Truex et al. 1998, Lamberson et al. 2000). If high female mortality continues, it is unlikely that the fisher will persist in the southern Sierra Nevada and indeed Truex et al. (1998) conclude "high annual mortality rates raise concerns about the long-term viability of this population."

Lamberson et al. (2000) used a deterministic, Leslie stage-based matrix model to gauge risk of extinction for the southern Sierra Nevada population of the fisher and found that the population has a very high likelihood of extinction given reasonable assumptions with respect to demographic parameters. They concluded:

> "In our model population growth only occurs when parameter combinations are extremely optimistic and likely unrealistic: if female survival and fecundity are high, other parameters can be relaxed to medium or low values. If female survival and fecundity are medium and all other parameters high, a steady decline toward extinction occurs."

At this time, all evidence indicates that female survival and fecundity are not high and thus the southern Sierra population of the fisher has a very high probability of extinction over a relatively short

period of time (10-50 years). Further, the model used by Lamberson et al. (2000) assumes there is no demographic stochasticity and that the environment is stable, and does not consider potential loss of fitness associated with loss of genetic variability (Brook et al. 2002). All of these factors would tend to make population predictions more dire (Lamberson et al. 2000). In particular, changes to the environment from further habitat loss and fragmentation due to logging, road building, and urban development are likely to cause additional population declines, bringing the fisher closer to extinction. Truex et al. (1998) concluded:

> "High natural mortality rates and altered forest structures are risk factors that are compounded by the fact that fishers in the southern Sierra Nevada are separated from those in northern California by a distance of at least 400 km. Thus, the population will probably receive no immigrants to augment its genetic diversity or to rescue it from random events that could lead to its extirpation. Special consideration should be given to the effects of all land management activities on the short and long-term viability of this isolated population."

II. Northern California Population

Three studies of fisher demography have been conducted in northern California—one in the Northern California Coast Ranges (North Coast Study) on the Six Rivers National Forest (1992-1997), another in the eastern Klamath Mountains on the Shasta-Trinity National Forest (1992-2000) (Truex et al. 1998), and a third on the Hoopa Indian Reservation (Hoopa demographic monitoring report; undated). These studies indicate that fisher mortality may be high in northern California and suggest that continuing habitat loss and fragmentation may be harming the existing population. In addition, the northern California population is isolated from fisher populations in the rest of North America and small enough that inbreeding and population viability may be serious problems.

One recent estimate for the northern California population is <750 individuals (Nichol 2006). Similar to the southern Sierra, the small size of the northern California population is cause for concern, particularly considering that the population is isolated from the larger continental population, has high female mortality, and continues to experience habitat loss (Truex et al. 1998).

Because of loss of the fisher from most of Oregon and Washington, fishers in northern California are reproductively isolated from fishers in the rest of North America. This isolation precludes genetic interchange, increasing the vulnerability of the northern California population. Drew et al. (2003) documented that fishers in California already have lower genetic diversity than other populations in North America. Lower genetic diversity could be associated with adaptation to local conditions, but is more likely the result of reduction of population numbers with habitat loss (Drew et al. 2003), and may be resulting in reduced population fitness. Furthermore, isolation makes it unlikely that in the event of population decline, immigration from other populations could temporarily augment the population, rescuing it from extinction.

Vulnerability of the northern California fisher population is exacerbated by relatively high mortality rates, particularly among females. Research at the Hoopa Valley reservation has documented an overall decreasing survivorship of females that has changed the sex ratio of the population (Nichol 2006, Hoopa demographic monitoring report; undated). Truex et al. (1998), for example, concluded: "the higher female than male mortality rates, across all three study areas, raises concern." On the North Coast study area, survival rates pooled across years were 83.8 percent for both females and males (Truex et al. 1998). If fishers with unknown fates were included, however, survival rates were considerably lower. Using the effort-based method, the survival index was 50 percent individual survival over 8.3 animal monitoring years (Truex et al. 1998). On the Eastern Klamath study area, survival rates pooled across years were 72.9 percent for females and 85.5 percent for males (Truex et al. 1998). Although population growth rates have not been modeled, high female mortality in combination with low and highly variable observed fecundity rates (Truex et al. 1998) indicate that fisher populations in northern California are probably declining or will do so in the future. Significantly, humans were the cause of half of the known mortalities in northern California in this study, including two fatalities to collision with automobiles and two from hunters.

There is additional evidence of recent fisher population declines in northern California based on intensive mark-recapture research on the Hoopa Indian Reservation. From 1996-1998, trap success on the reservation was 12 percent, but in the same area in 2004-2006 trap success was only 5 percent (see Nichol

2006). In 2007, the reservation documented that 3 of 12 denning females were killed by predators and an additional 3 failed reproduction, possibly due to weather. Moreover, camera stations have demonstrated that fishers per km^2 decreased from 0.35-0.58 in 1997 to 0.16-0.17 in 2005 (Coastal Martes Working Group notes; 14 June 2006).

Finally, the northern California fisher population is vulnerable to past and continued loss of habitat from logging. Logging, for example, is believed to be the cause of lower fisher densities, larger home ranges, low capture rates, and a high proportion of juveniles in the population in the Eastern Klamath study area (Truex et al. 1998). Truex et al. (1998) concluded:

> "Fishers appear to exist in poorer quality habitat in this region than in the others... Some of the differences may be climatic; inland forests receive less moisture and therefore have lower productivity than coastal forests. However, it is clear from the history of timber harvest, and by aerial examination of the three study areas, that the eastern Klamath area has been subjected to more timber harvest—and more by clearcutting—than the other two areas."

If Truex et al. (1998) are correct that low fisher densities in the eastern Klamath relate to logging, continued habitat loss from logging and development may push the population below a sustainable density, whereby Allee effects and demographic stochasticity lead to additional loss of range in California. This would further isolate the two California populations from each other. Moreover, loss of fishers from substantial portions of Oregon and all of Washington in part because of logging (Powell and Zielinski 1994) provides an indication that with continued logging the fisher in northern California is at serious risk.

NATURE, DEGREE, AND IMMEDIACY OF THREAT

I. Timber Harvest

Logging is believed to be one of the primary causes of fisher decline across the United States (Powell 1993) and is probably one of the main reasons Pacific fishers have not recovered in Washington, Oregon, and portions of California (Aubry and Houston 1992, Lewis and Stinson 1998, Truex et al. 1998, Carroll et al. 1999, Campbell 2004, Zielinski et al. 2004a). Moreover, existing and planned timber harvests on both public (Truex and Zielinski 2005) and private (Carroll et al. 1999) lands may further degrade suitable fisher habitat. The following sections detail the method, extent, and probable effect on the fisher and its habitat of logging in the different portions of its California range. In particular, we summarize data from several studies that estimated decline of late-successional and old-growth forests (Morrison et al. 1991, USDI 1990, Bolsinger and Waddell 1993, FEMAT 1993, Franklin and Fites-Kaufmann 1996, Beardsley et al. 1999, Zielinski et al. 2005a). Although fisher undoubtedly can be found in areas not classified as late-successional forest, numerous studies confirm that fishers are strongly associated with unfragmented forests with late-successional characteristics (e.g. Seglund 1996, Dark 1998, Truex et al. 1998). Thus, we have cited studies demonstrating decline of late-successional forests not as an exact measure of loss of fisher habitat, but instead as an indicator of severity of loss of fisher habitat. USDI (1990) took a similar approach in determining threatened status for the northern spotted owl (*Strix occidentalis caurina*), citing studies of old-growth forest decline as evidence of loss of habitat, while also acknowledging:

> "Current surveys and inventories have shown that while northern spotted owls are not found in all old-growth forests, nor exclusively in old-growth forests, they are overwhelmingly associated with forests of this age and structure."

Based on references cited herein, the above statement similarly applies to the fisher.

a. Sierra Nevada

Logging in the Sierra Nevada has resulted in substantial declines in late-successional forests and removal of key components of fisher habitat, including large trees, snags, and downed logs, multi-layered canopies, and high canopy closure, from large portions of the landscape (McKelvey and Johnston 1992, Franklin and Fites-Kaufman 1996, Beardsley et al. 1999, Zielinski et al. 2005a). Removal of these components from Sierra Nevada forests has resulted in loss and fragmentation of fisher habitat, particularly in the northern Sierra Nevada where the fisher appears to be extirpated.

Sierra Nevada forests include extensive areas of both private and federal lands, including seven National Forests in the historical range of the fisher (Lassen, Plumas, Tahoe, Eldorado, Stanislaus, Sierra and Sequoia). Approximately 28 percent of the fisher's historic range in the Sierra Nevada is in private ownership (California GAP Analysis Project 1997). Over 50 percent of the private lands capable of providing the mature coniferous forests preferred by fishers as habitat, however, are industrial timberlands (PRIME California Inventory Data 1997).

Unlike the Pacific Northwest, where the majority of logging was accomplished through clearcutting, logging method has varied in the Sierra Nevada, including clearcut, selection, high-grade, salvage, shelterwood, seed tree, and overstory removal methods (Verner et al. 1992). The effect of these cutting metheds, however, has been largely the same—the removal of late-successional forest conditions from large portions of the landscape. Verner et al. (1992) concluded:

> "Clearcut, seed-tree, and shelterwood cutting techniques all have the same goal: produce even-aged stands. In this regard seed-tree and shelterwood systems can generally be thought of as two-stage (sometimes three-stage) clearcuts. In all of these cutting systems, the original stand will be totally removed before the new stand is scheduled to be cut."

Similarly, on past selective cutting, Verner et al. (1992) concluded:

> "'Selective' harvest in the Sierra Nevada has, in the past, primarily targeted the large trees. This system sometimes called 'pick and pluck,' will not produce the simple, even-aged structures that characterize clearcutting techniques, but its effect on the presence of large, old trees is similar."

Though less prevalent than in the Pacific Northwest, extensive clearcutting has occurred in the Sierra Nevada. Clearcutting was common on Forest Service lands in the Sierra Nevada throughout the 1980s and into the mid 1990s, accounting for most of the volume harvested from 1983 to 1987 (McKelvey and Johnston 1992) and is still occurring on private lands. Regardless of method, logging in the Sierra Nevada has resulted in drastic changes in forest structure across the landscape.

By all accounts, the majority of mixed-conifer and ponderosa pine forests in the Sierra Nevada at the turn of the previous century were characterized by exceedingly large trees and a high degree of structural complexity (Sudworth 1900, Leiberg 1902, McKelvey and Johnston 1992, Franklin and Fites-Kaufmann 1996). Franklin and Fites-Kaufmann (1996), for example, stated:

> "The collective inference from all lines of evidence is that stands with moderate to high levels of LS/OG [late successional / old-growth] -related structural complexity occupied the majority of the commercial forestlands in the Sierra Nevada in presettlement times."

Sudworth (1900) quantified the number, species, and size of all trees over 28 cm (11 inches) DBH on 22 0.1-ha (0.25-acre) plots, of which three were sub-alpine types and thus not of interest in relation to the fisher. The average DBH of trees on the remaining 19 plots was 104 cm (40.9 inches), with individual plots ranging from 65-134 cm average DBH (25.6 to 52.7 inches). Given the predominance of large trees in most Sierran stands, it is likely that there were also considerably more large snags and downed logs than exist on the present landscape (Franklin and Fites-Kaufman 1996). Sudworth's data also indicate that pre-European settlement forests were fairly dense. The average number of trees over 28 cm DBH in the 19 plots measured by Sudworth (1900) was 24 trees with individual plots ranging from 15 to 43 trees. Considering the number and size of trees found in turn-of-the-century Sierran forests as measured by Sudworth (1900), and that according to Beardsley et al. (1999) "the crowns of the species found in mixed conifer are generally broad, thereby resulting in dense canopy cover," it is likely that most pre- European settlement Sierran mixed-conifer forests had fairly high canopy closure. Bouldin (1999) compared Sudworth's data with data from numerous vegetation plots measured in 1935 and determined that Sudworth had probably selected highly productive sites for sampling, biasing his conclusions. Nevertheless, Bouldin similarly concluded that there have been "drastic decreases in trees >36" diameter," supporting the basic contention that Sierra Nevada forests have been substantially altered since European settlement.

Primarily because of logging, present day Sierran forests are drastically different from those described by Sudworth at the turn of the century. Some forest stands once dominated by trees well over 64 cm DBH (25 inches) are now dominated by trees under about 50 cm (20 inches). McKelvey and Johnston (1992), for example, concluded:

> "A comparison of that distribution [Sudworth (1900)] with the largest diameter stands in Sierran forests of today shows that far more of the stand basal area in the forests of 1900 was concentrated in very large trees... To various degrees, the forest system has been changed from one dominated by large, old, widely spaced trees to one characterized by dense, fairly even-aged stands in which most of the larger trees are 80-100 years old."

Sierra Nevada forests also have fewer large snags and logs, an absence of multi-layered canopies, and reduced total canopy cover. Franklin and Fites-Kaufmann (1996) concluded:

> "A logical inference from both the rankings and the tabulated characterizations of the patches developed in the mapping exercise is that large-diameter decadent trees and their derivatives—large snags and logs—are generally absent or at greatly reduced levels in accessible, unreserved forest areas throughout the Sierra Nevada. This reflects the selective removal of the large trees in past timber harvest programs as well as the removal of snags and logs to reduce forest fuels due to wildfire concerns."

Overall declines in late-successional forests have been substantial. Two studies have tried to determine the extent of these declines. Based on a comparison of 2,455 ground plots measured in 1991-1993 with data from a 1940s-era mapping project, Beardsley et al. (1999) estimated that old-growth forests declined from 45 percent of the landscape in the mixed conifer, true fir, and pine types to 11 percent of the landscape between 1945 and 1993. Considered alone, however, mixed-conifer old growth declined from 50 to 8 percent of the landscape, indicating that these forests have declined by approximately 84 percent

since 1945. Remaining old-growth was found to occur primarily on federal lands, reflecting the substantial degradation of private lands. The authors stated that by 1993:

> "Of the 4.8 million acres of mixed-conifer forests in the Sierra Nevada, 371 thousand acres (8 percent) were old-growth. Almost all the old-growth was in Federal ownership, mostly National Forests and National Parks. Surprisingly, most of the old-growth in National Forests was outside designated wildernesses. Less than 2 percent of the 3 million acres of privately owned coniferous forests was old-growth."

Beardsley et al. (1999) noted that though many stands fail to qualify as old-growth, they have one or more large trees. Presumably a portion of these stands provide potential resting and denning habitat for fishers. Even these stands, however, are highly limited. The study found only 8 percent of the landscape is occupied by stands with three or more trees greater than 102 cm (40 inches) DBH and only 21 percent of the landscape was found to have one or more trees greater than 102 cm DBH.

With similar results, Franklin (1996) compared the amount of late-successional forests (LS/OG Ranks 4 and 5) in national parks and national forests in the Sierra Nevada and found that in the former, high-quality late successional/old-growth forests occupy 67 percent of mixed conifer forests, compared to 12 percent in the latter, indicating an approximate decline of 82 percent due to logging in national forests. Further, much of the late-successional forest remaining on national forests has been degraded by some selective cutting, or is highly fragmented (Franklin and Fites-Kaufmann 1996).

Loss and degradation of late-successional forests have been particularly severe in the central and northern Sierra Nevada, where logging began early and there are extensive private land inholdings (Leiberg 1902, McKelvey and Johnston 1992, Beck and Gould 1992). The onset of the gold rush in 1849 and later completion of the Southern Pacific Railroad resulted in extensive cutting in the Tahoe-Truckee Basin and surrounding areas prior to 1900 (Leiberg 1902, McKelvey and Johnston 1992). Logging has remained intensive in the northern and central Sierra to the present with the largest volumes removed since World War II. Beesley (1996), for example, noted that:

> "As an example, between 1902 and 1940, the total timber harvested on the Eldorado National Forest was 148.9 million board feet. From 1941 to 1945 it totaled 175.4 million board feet, reflecting wartime demand. Between 1946 and 1956, the harvest total stood at 728.9 million board feet, meaning that in thirteen years more than twice as much timber was harvested on the Eldorado than in the preceding forty-three years."

Intensive logging on private lands has furthered loss and degradation of late-successional forests, particularly in the central and northern Sierra Nevada. In the fisher's historic range north of Yosemite National Park, approximately 38 percent of the land is in private ownership and is predominantly managed as industrial timberlands—a far larger proportion than in the southern Sierra, with only 10 percent in private ownership, with no lands managed strictly as industrial timberlands (Table 5).

Table 5. Data summarized from the PRIME California Inventory Data 1997.

Region	Counties Included	Timberland (acres)			
		Public	Industrial	Other Private	TOTAL
North of Yosemite NP	Amador, Calaveras, Tuolumne, Butte, El Dorado, Glenn, Nevada, Placer, Plumas, Sierra, Tehama, Yuba	2,972,000	1,051,000	837,000	4,860,000
South of Yosemite NP	Fresno, Tulare, Mariposa, Stanislaus	1,002,000	0	114,000	1,116,000
	TOTAL	**3,974,000**	**1,051,000**	**951,000**	**5,976,000**

Logging on private lands has resulted in almost complete loss of stands with late-successional characteristics. Bias and Gutierrez (1992), for example, found that private lands in an area of checkerboard ownership within the Eldorado National Forest were generally depauperate of large trees and snags and other characteristics typical of late-successional forests. Further, Beardsley et al. (1999) found that less than 9 percent of private forestlands in the Sierra Nevada have a mean stand diameter greater than 53 cm (21 inches) DBH and that less than 2 percent can be classified as old-growth. These findings indicate loss

and fragmentation of late-successional forests and suitable fisher habitat over a substantial portion of the fisher's range.

Logging of both private and federal lands in the Sierra Nevada has had a dramatic effect on fisher habitat, resulting in loss of most suitable habitat in the central and northern Sierra Nevada and contributing to the likely extirpation of the fisher from this portion of the range. For example, Bombay and Lipton (1994) determined that the Eldorado National Forest lacked sufficient habitat to create high-quality "fisher use areas" because of an over-abundance of "sparse and open stands" and lack of contiguous mature or late-successional stands. Most high-quality habitat was found to occur in patches smaller than 16 ha (40 acres). Bombay and Lipton (1994) concluded:

> "The current vegetation on the Eldorado National Forest appears to provide a limited number of areas which meet the model parameters for habitat to support a fisher reproductive unit. Given this analysis, it would appear that the Eldorado National Forest does not currently have sufficient amounts and distribution of continuous large trees, dense canopied forest to support a population of fisher across the forest."

Similarly, the Lassen National Forest Land Management Plan concluded that "based on existing information, we have limited suitable furbearer habitat on the Forest right now. Existing habitat is being fragmented by continued logging and, in most instances, no longer meets the medium habitat capability for marten and fisher," (USDA Lassen National Forest 1993). Based on similar intensity of logging, extent of private inholdings (e.g. Beck and Gould 1992, McKelvey and Johnson 1992), and probable absence of fishers (Zielinski et al. 1997b), it is likely that the Stanislaus, Tahoe, and Plumas National Forests also lack sufficient suitable habitat for the fisher.

Logging impacts on fisher habitat also have been severe in the southern Sierra Nevada, particularly since World War II. For example, annual timber production in Fresno County rose from roughly 37 million board feet in 1947 to a peak in 1975 of 136 million board feet, remaining high into the early 1990s (Bolsinger 1978). This logging, including extensive clearcutting in the 1980s, has resulted in loss of forests with late-successional characteristics, and has compounded a high degree of natural fragmentation (Zabel et al. 1992). Spencer et al. (2007 at p. 42) found that "highly suitable resting microhabitats appear to be relatively rare even within areas of predicted suitable habitat at the coarse scale" in the southern Sierra Nevada.

Zielinski et al. (2005a) examined changes in the distribution of Pacific fishers relative to changes in old-growth forest cover in the Sierra Nevada over the previous century. Alterations in mature forest cover were represented by the difference between the historical Weislander Vegetation Type Map Survey (1929 and 1934; published in 1946) and contemporary vegetation data from the Sierra Nevada Ecosystem Project (1996) (Figure 3). In 1945, old-growth (where >50 percent of cover was from mature trees) comprised half of the forested area in the Sierra Nevada, and young growth/old-growth (where 20-50 percent of cover was from mature trees) comprised 76 percent of the area. By 1996, only 3 percent of the forested area in the Sierra Nevada was highest-ranking late-successional old-growth, with 38 percent of the Sierra Nevada being low to high-quality late-successional old-growth. These changes were most evident in the portion of the Sierra Nevada north of Yosemite National Park, where the loss of mature and old-growth forest conditions has been greatest – and also the region from which the fisher has been extirpated. The authors note (at p. 1401) that fishers:

> "live in low productivity and highly seasonal environments, have relatively short gestations, long periods of lactation, long inter-birth intervals and large home range sizes... This suite of life history characteristics led them to be characterized as 'bet-hedgers' (along with wolverines), a group that is particularly vulnerable to habitat disturbance and adult mortality." Furthermore, "even among carnivores, which are particularly vulnerable to extinction among mammals,...fishers are especially vulnerable to local extirpation and our data support this conclusion."

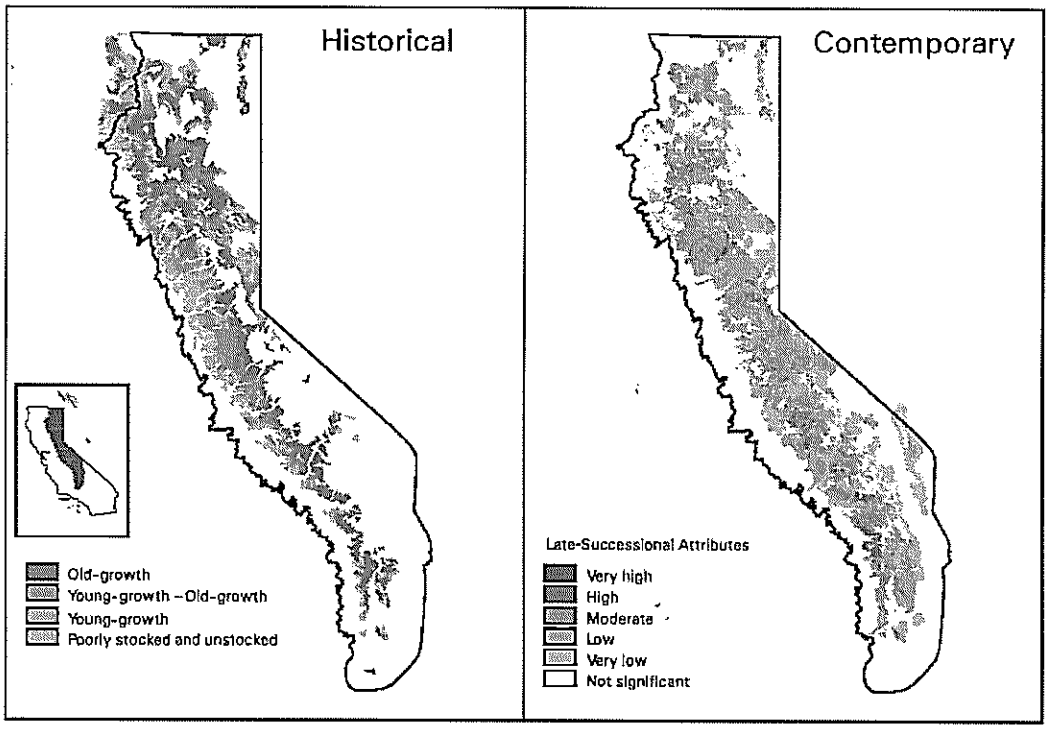


Figure 3. Maps of historical (Weislander Vegetation Type Survey, 1929 and 1934) and contemporary (Sierra Nevada Ecosystem Project, 1996) old-growth forest cover in the Sierra Nevada. From Zielinski et al 2006.

Changes in forest cover from logging and other anthropogenic activities not only directly impact fishers by eliminating the habitat elements needed for shelter, breeding, and foraging. Secondary, indirect impacts of logging include the creation of habitat conditions that favor generalist species such as gray fox and striped skunk (Campbell 2004). Campbell (2004) suggested (at p. 45) that habitat modification can facilitate access to habitat for generalist species that then displace or compete with the fisher, and that higher densities of these generalist species may ultimately hinder the recolonization of fishers into the northern Sierra Nevada.

Logging not only impacted fisher habitat historically, but remains a serious threat to the species to this day. For their petition to the U.S. Fish and Wildlife Service to list the Pacific fisher as an endangered or threatened species under the federal ESA, Greenwald et al. (2000) analyzed the impacts of logging on the fisher on national forest lands in the Sierra Nevada from 1993 to 1998. This analysis included projects proposed during the decade prior to the 2001 Sierra Nevada Forest Plan Amendment. Greenwald et al. (2000) reviewed Biological Evaluations (BEs), Environmental Assessments (EAs) and other decision documents for Forest Service projects where the agency concluded "may affect individual fishers, but is not likely to lead to a trend towards listing" from 1993 to July 1998. These documents were obtained through a Freedom of Information Act request that specifically asked for documents that determined potential effects to the California spotted owl for a particular time period, and thus the analysis only comprises a portion of those where effects on the fisher were determined. In addition, Greenwald et al. (2000) analyzed effects on the fisher of logging on private lands in the Sierra Nevada during the same time period by analyzing 204 timber planning documents from an area that is important for dispersal of fishers from the southern to the central and northern portions of the Sierra Nevada. These analyses indicate that logging on both Forest Service and private lands is having significant effects on this small and isolated population of the fisher:

Sequoia National Forest

Between 1993 and 1998, the Sequoia National Forest planned or carried out 20 projects, where the Forest biologist concluded that it "may affect the fisher, but will not likely lead to a trend towards Federal listing." Eighteen of these projects were timber sales. The other two were recreation related. Fishers were

detected in surveys or sighted within the vicinity of 14 of the projects. Timber sales in the 5-year period potentially affected 21,755 acres, or 2.4 percent of the forested area on the Sequoia National Forest, and removed up to 60.6 million board feet. Thinning and salvage were the most commonly utilized cutting methods. The former generally results in reduced canopy closure and ground disturbance, both harmful to fisher habitat, and the latter potentially removes structures used for resting and denning by the fisher. The two recreation projects included a trail plan for the entire forest and plans to construct the Sirretta Peak Trail. In the latter case, it was determined that the project would increase fragmentation, "affecting the normal travel patterns of fisher and marten."

Sierra National Forest

Between 1993 and 1998, the Sierra National Forest has planned or carried out 48 projects where the biological evaluation concluded "may affect individuals, but not likely lead to a trend towards Federal listing," or similar language. The majority of these were timber sales (28), followed by general projects (10), recreation (4), livestock grazing (3), prescribed burns (2), and roads (1). Fishers were sighted in the vicinity of five of the projects. Most were not specifically surveyed as part of the environmental review for the project, however. Timber sales potentially affected 27,026 acres and removed 107.3 million board feet. An additional 6,736 acres were affected by other projects. In total from 1993-1998, 3.9 percent of the forested area on the Sierra National Forest was impacted by these projects.

Cutting methods in the 28 timber sales included salvage, thinning, sanitation, shelterwood, and hazard tree removal. Most followed the Interim Guidelines to protect the California spotted owl. The Guidelines include prescriptions for previously established "spotted owl habitat areas," which protect 1,000 acre blocks of habitat around a portion of known owl sites; "protected activity centers," which protect 300 acres around most owl locations; and matrix lands. In matrix lands, two tiers of guidelines apply. In "select strata," which are stands preferentially selected by the owl for nesting, roosting or foraging, one entry for timber removal is allowed, but cutting is limited to trees <30 inches DBH and must retain ≥40 percent canopy closure, up to eight snags per acre ≥ 30 inches DBH or a snag basal area of 20 sq. ft/acre, 10-15 tons per acre of the largest downed logs, and 40 percent of the basal area in the largest live and cull trees. In "other strata," which also contains some stands used by the owl for nesting, roosting or foraging, the same guidelines apply, except canopy closure can be reduced below 40 percent and only 30 percent of the basal area must be retained in the largest trees. All, as evidenced by the determination of effects, removed or reduced components of high-quality fisher habitat, such as high canopy closure and multi-layered canopies.

The severity of effects on the fisher varied in the remaining projects. For example, general projects ranged from renovation of existing buildings, likely having a minimal effect on the fisher population, to three separate strychnine poisoning projects over thousands of acres, potentially resulting in loss of prey for or poisoning of fishers, which feed on pocket gophers and other rodents that may be poisoned (Zielinski et al. 1999). Similarly, recreation projects ranged from trail maintenance, in and of itself probably having little impact, to an OHV event, potentially affecting fishers through increased human activity and noise. The one new road that affected the fisher likely compounded habitat fragmentation from the existing system of roads on the Sierra National Forest.

Considering the small size and isolation of the fisher population (Truex et al. 1998), the negative effects of even one or a few projects should be cause for concern. Overall, the two national forests conducted or planned 68 projects in one five-year period that were considered to potentially negatively affect the fisher. Considered individually each project may not lead to a trend towards Federal listing. However, considered cumulatively and in the context of the considerable past habitat loss and fragmentation that has occurred on these forests, it is clear that this fragile fisher population and its habitat are being negatively affected, necessitating listing under CESA.

In addition, despite a prohibition on cutting trees >30 inches DBH enacted under the Interim Guidelines, a number of these sales cut larger trees that are used for resting and denning by the fisher. For example, the 10S18 Fuels Reduction Project, which was exempted from the Interim Guidelines as an administrative study, cut more than 300 trees >30 inches diameter. The recently proposed Kings River Project in the Southern Sierra Fisher Conservation Area is another example of a major logging project exempted from protective guidelines – in this case, the 2001 Sierra Nevada Forest Plan Amendment – under the guise of an administrative study.

Kings River Project

The massive administrative study known as the Kings River Project proposes timber harvest, herbicide treatments, and prescribed fire on 131,500 acres in the Dinky Creek and Big Creek watersheds of the Sierra National Forest over 25 years. The Forest Service recently approved Phase I, which authorizes logging of trees up to 30 inches DBH on more than 7,800 acres, including 5,000 acres of fisher habitat. The impacts analysis for the project assumed that suitable fisher habitat includes forests with canopy cover as low as 40 percent. The project proposes to eliminate dense forest cover on about 900 acres, despite research documenting that fishers select much higher levels of canopy cover (>60 percent but typically greater than 70 percent) at the microhabitat (Truex et al. 1998), home range (Zielinski et al. 2004b), and landscape scales (Carroll et al. 1999). In response to public outcry, the Forest Service's final decision proposed to retain 50 percent of the landscape outside the Wildland Urban Interface with a minimum of 60 percent canopy cover. However, this prescription is still inadequate to protect fishers, as female home ranges in the southern Sierra have a much larger proportion of the area (more than 70 percent) with >60 percent canopy cover. Spencer et al. (2007) explicitly stated:

> "The Kings River Administrative Project Area should be a focal area for increasing habitat value and contiguity. Fisher habitat between the Kings and San Joaquin Rivers is a relatively long and narrow stretch of variable but mostly moderate-quality habitat with rather tenuous potential as a source population area under current conditions...*Management should strive to increase the value, extent, and connectivity of fisher habitat between the Kings and San Joaquin Rivers*." Emphasis in original.

Spencer et al. (2007) also note (at p. 42) that "further reductions or fragmentation of fisher habitat in this population segment may disrupt metapopulation dynamics sufficiently to increase extinction risks to the north and south...and consequently of the population as a whole." By eliminating the habitat needed by fishers to survive and reproduce, the Kings River Project as currently approved would seriously reduce the capability of the habitat to support fishers, in direct opposition to recommendations by premier fisher biologists.

Moreover, the project encompasses about 5 percent of the Southern Sierra Fisher Conservation Area that was designated for protection in the 2001 Sierra Nevada Forest Plan Amendment, indicating a failure of existing regulatory mechanisms to ensure a safety net for fishers. An estimated 36 individual fishers and portions of 13 fisher home ranges may occur within the project site. Given that fishers in the southern Sierra Nevada currently number between 100 and 500 animals, with potentially as few as 50 remaining females, this single major project is likely to contribute significantly to further population declines, and as such it poses a major threat to the continued persistence of the species in the southern Sierra Nevada. Fisher scientist Dr. Reginald Barrett stated in his expert declaration for an appeal of the Kings River project,

> "Lamberson 2000 notes that the loss of a few reproductive females could lead to a downward population spiral that culminates in extirpation. In my opinion, the proposed reductions in habitat quality in the Kings River Project could lead to such loss or, at a minimum, a reduction in reproductive success, which is key to fisher survival."

There is precious little 'wiggle room' for conducting experimental studies that eliminate and degrade critical fisher habitat in the southern Sierra Nevada because this population is extremely imperiled and reproductive rates in recent years have been perilously low (18 percent in 2003 and 36 percent in 2004 as reported by Dr. Barrett). Such large-scale degradation of fisher habitat in the Kings River Project also would adversely impact the fisher's ability to recover and recolonize. Notes Dr. Barrett, "the disappearance of fisher from the Kings River project area would create a bottleneck in the already imperiled Southern Sierra population similar to the central and northern Sierra bottleneck that has led to the fisher's current isolation and endangered status."

The Forest Service has justified the project's short-term adverse impacts on fisher by claiming that habitat will be 'protected' from fire in the long-term. However, the lack of scientific data supporting the need to remove medium and large-sized trees (i.e. ≥38 cm/15 inches DBH) for fire-risk reduction indicates that the Kings River Project would needlessly remove critical habitat elements required by fisher to persist in the area.

It is well-established that historic and recent logging has contributed to the extirpation of the Pacific fisher in the Sierra Nevada north of Yosemite National Park. Given the strong association of fishers with large trees and snags (Seglund 1995, Dark 1997, Truex et al. 1998, Campbell 2004, Zielinski et al. 2004a), the currently low numbers of such habitat elements across the landscape (Franklin and Fites-Kaufman 1996), and the high potential for extirpation of the fisher in the near future (Lamberson et al. 2000), administrative studies and other projects that remove substantial numbers of large trees, like the 10S18 Fuels Reduction project and the proposed Kings River Project, are likely to push the remnant highly imperiled population in the southern Sierra Nevada towards extinction. An administrative appeal of the Kings River Project by the Sierra Club, Sierra Forest Legacy, Earth Island Institute, and the California Native Plant Society was recently denied by the Forest Service and the project is being litigated.

In sum, logging projects that remove larger-sized trees, decrease canopy cover, and remove large snags on national forests in occupied Pacific fisher habitat continue to be proposed to this day and pose a major threat to the survival and recovery of the species.

Private Lands

More than 20 percent of lands north of Yosemite National Park are industrial timberlands, and overall nearly 40 percent are private lands subject to extensive anthropogenic changes (Table 5). South of Yosemite, about 11 percent of lands are in private ownership, although none are designated as industrial timberlands. Below, we describe results from recent research on timber harvest trends indicating continued extensive logging on private lands and a rise in the use of clearcutting as a silvicultural method, further exacerbating the ability of fisher populations to recover in the Sierra Nevada.

1. Assessment of Timber Harvest Plans in the Sierra Nevada, January 1999 to July 2002

The California spotted owl shares many of the habitat associations of the Pacific fisher. In the Sierra Nevada the California spotted owl occupies mixed conifer, red fir, ponderosa pine, and foothill riparian forests. Verner et al. (1992) calculated that 81.5 percent of owl territories were in mixed conifer, 9.7 percent in red fir, 6.7 percent in pine-oak, 1.6 percent in foothill riparian hardwood and 0.5 percent in eastside pine. Similarly, detections of fishers in the Sierra Nevada were most frequent in Sierran mixed conifer (46.4), followed by montane hardwood-conifer (18.8), montane hardwood types (11.6), red fir and Jeffrey pine (7.2 each), white fir (4.3), and montane riparian and ponderosa pine (1.4 each; Campbell 2004). Thus, there is overlap in forest types occupied by California spotted owls and Pacific fishers.

The majority of owls and fishers are found in Sierran mixed conifer forests, which occupy a mid-elevation belt on the west side of the Sierra Nevada, roughly 10-70, but mostly less than 30, miles wide and approximately 400 miles long. Britting (2002) conducted an analysis examining the intensity and extent of timber harvest on private lands within the summer range of spotted owl in the Sierra Nevada (using habitat information from California Wildlife Habitat Relationships 2002, version 7.0) from January 1999 to July 2002. Given the overlap of range and associated habitat types between fishers and spotted owls, the results of the analysis are pertinent to fishers – for currently occupied habitat in the southern Sierra Nevada as well as formerly occupied habitats in the central and northern Sierra Nevada that are critical for recovery of the fisher. The complete report is attached to this petition (Britting 2002) and the results are summarized below.

Data from the California Department of Forestry and Fire Protection (CDFFP) were used to complete an analysis of timber harvest proposed on private lands throughout the Sierra Nevada for the period January 1999 to July 2002. Britting (2002) reported that a total of 765 Timber Harvest Plans (THPs) occurred with the range of the California spotted owl for the period 1999 to 2001. Silvicultural treatments covered a total of 216,675 acres. Silvicultural prescriptions were grouped into three broad categories: even-aged, uneven-aged, or other. Even-aged includes clearcutting and similar methods such as shelterwood removal, shelterwood seed, seed tree removal, and seed tree seed. Uneven-aged management involves group selection (small clearcuts), selection, and transition, and "other" involves no-harvest on non-timberland, sanitation salvage, fuelbreak, rehabilitation, special treatment, right-of-way road construction, and commercial thinning. The California Forest Practice Rules (CFPR) directs the retention of trees in intermediate, uneven-aged, and some stages of even-aged prescriptions as described in Table 7.

Table 7. Retention levels required under the CFPR (CFPR 913.2, 933.2, 953.2, 913.3, 923.3, 953.3).

Silvicultural Method	Retention Required
Selection	75 to 125 sq. ft. basal area per acre depending on site class
Group selection	Groups from 0.2 to 2.5 acres and not covering more than 20% of a stand; 80% of stacked plots must meet 75 to 125 sq. ft. basal area / acre depending on site class
Commercial Thinning	50 to 125 sq. ft. basal area per acre depending on site class and forest type; or where dominant canopy in trees 14" DBH or less 75 to 100 trees per acre depending on site class
Shelterwood Seed Step	Retain at least 16 trees 18" DBH or greater and trees over 24" DBH count as two trees; 50 to 125 sq. ft. basal area / acre depending on site class
Seed Tree Step	Retain at least 8 trees 18" DBH or greater and trees over 24" DBH count as two trees

Britting (2002) reported that of the total acreage submitted for THPs in the study area during from 1999 to mid-2002, 41.3 percent was subjected to even-aged management and 38.7 percent to uneven-aged management. The remaining 20 percent was treated by other prescriptions (Table 8). Thus, the majority of private timberlands in the Sierra Nevada were subjected to clearcutting or similar silvicultural prescriptions.

Table 8. Acreage of each prescription group included in THPs within the range of CSO in the Sierra Nevada between 1999 and 2002. Prescription groupings are as outlined in Table 15.

YEAR	EVEN-AGED (AC)	UNEVEN-AGED (AC)	OTHER (AC)	TOTAL (AC)
1999	35,171	41,334	18,214	94,719
2000	27,894	20,366	10,058	58,318
2001	24,254	18,572	12,386	55,212
2002 (as of 6/25)	2,191	3,676	2,559	8,426
Total	**89,510**	**83,948**	**43,217**	**216,675**

A total of 487 different landowners submitted THPs. Of these, approximately 76 percent of the acres to be harvested were owned by just 13 parties. The five parties submitting the greatest number of acres to be treated accounted for over 54 percent of the acres to be treated in this period. Sierra Pacific Industries (SPI), the major private landowner in the Sierra Nevada, submitted THPs covering 68,960 acres for the period 1999 to mid-2002 (Table 9). This amounts to about 31 percent of all the acres in the THPs submitted in the Sierra Nevada.

Table 9. Comparison of Sierra Pacific Industries THP submission to all THPs submitted within the range of CSO in the Sierra Nevada.

OWNER	EVEN-AGED (AC)	UNEVEN-AGED (AC)	OTHER (AC)	TOTAL (AC)
SPI	41,630	9,790	17,544	68,960
All others	47,880	74,158	25,673	147,715
Total	**89,510**	**83,948**	**43,217**	**216,675**

THPs for the period 1999 to mid-2002 affected between 6 and 13 percent of the private coniferous forest land per county (Table 10). For counties within the current distribution of the fisher, 11,141 acres were treated on private lands during the time period. Italicized counties include those within the current distribution of the fisher in the Sierra Nevada.

Table 10. Distribution of acreage in THPs by county. County data from PRIME California Inventory Data 1997. Italicized counties are within the currently occupied range of the Pacific fisher.

County	Forest Industry	Other	Total Private	Total treated acres 1999 to 2002	% treated in 42 months
Amador	27,000	34,000	61,000	6,487	11
Butte	153,000	76,000	229,000	18,548	8
Calaveras	53,000	83,000	136,000	8,318	6
El Dorado	120,000	131,000	251,000	16,956	7
Fresno and Madera	0	60,000	60,000	*7,817*	13
Lassen	281,000	63,000	344,000	26,612	8
Mariposa	0	31,000	31,000	*1,946*	6
Nevada	36,000	163,000	199,000	17,225	9
Placer	69,000	93,000	162,000	10,228	6
Plumas	216,000	100,000	316,000	25,438	8
Shasta	527,000	175,000	702,000	34,975	5
Sierra	63,000	48,000	111,000	12,687	11
Tehama	196,000	9,000	205,000	18,369	9
Tulare and Kings	0	23,000	23,000	*1,378*	6
Tuolumne	66,000	51,000	117,000	6,714	6
Yuba	34,000	42,000	76,000	5,782	8
TOTAL	**1,841,000**	**1,182,000**	**3,023,000**	**219,480**	**7**

2. Regional analysis of the Sierra Nevada's Southern Forest District 1990 to 2003

For a petition to the U.S. Fish and Wildlife Service to list the California spotted owl as a threatened or endangered species under the federal ESA, Greenwald and Thomas (2004) examined the intensity, type, and extent of THPs proposed in the 'Southern Forest District,' a region extending from El Dorado County in the north to San Bernardino County in the south and covering 11 counties. This regional analysis uses the geographic information system (GIS) database of timber harvest plans (THPs) created by the California Department of Forestry and Fire Protection (CDFFP) for the Southern Forest District (CDFFP 2003 and 2004) for the period 1992 to mid-2003.

Private timberland in the 11 counties in the Southern Forest District represented in the database covers approximately 3.0 million acres (PRIME Timber Inventory 1999). Approximately 367,082 acres or 12 percent of this area has been harvested in a 12-year period from 1992 to 2003 (Tables 11 and 22). A number of management approaches are used in this landscape. Using the prescription classes defined above, Table 11 below displays the distribution of acres to be harvested. The acreage of uneven-aged management peaked in 1996 and has dropped since that time (Figure 4). Meanwhile, since 1999 there has been an increase in even-aged management in this region. This management class now generally exceeds all other types (Britting 2002).

Table 11. Acreage identified in THPs from 1990 to 2003 in the Southern Forest District.

Year	Alternative	Even-aged	Other	Uneven	TOTAL
1992	7,882	1,305	5,340	15,655	30,181
1993	4,772	2,828	12,368	22,397	42,365
1994	4,632	3,995	5,978	26,402	41,007
1995	6,607	4,079	5,330	22,159	38,175
1996	6,389	16,544	17,300	27,165	67,397
1997	1,987	5,757	7,675	16,137	31,556
1998	1,089	7,265	5,252	11,150	24,757
1999	1,143	10,327	3,156	8,405	23,030
2000	1,913	4,221	1,889	3,801	11,824
2001	5,008	3,823	3,100	5,650	17,581
2002	4,276	8,535	3,086	5,164	21,061
2003	3,807	7,263	3,494	3,583	18,148
TOTAL	**49505**	**75,941**	**73,968**	**167,667**	**367,082**

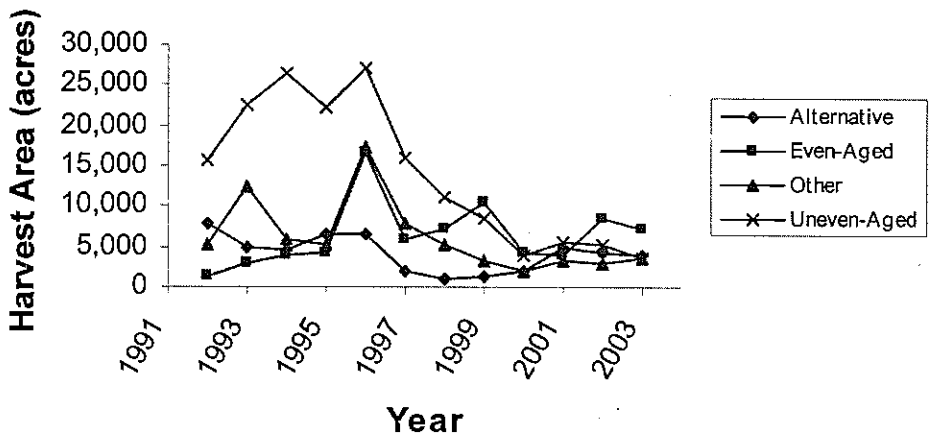


Figure 4. Trend of silvicultural prescription types used on private lands in the Southern Forest District of the Sierra Nevada from 1992 to 2003. Data values from Table 11 above.

Throughout the Southern Forest District and during this time period over 1,000 different land owners submitted THPs. Most of these THPs were small and less than 1,000 acres in size. Overall, five industrial land owners dominated the submissions of THPs and accounted for about 66 percent of the area proposed for harvest (Table 12).

Table 12. Distribution of area proposed for harvest by land owner.

Landowner	Harvested Area (Ac)	Proportion of Total (%)
Sierra Pacific Industries	130,365	36
Georgia Pacific	58,650	16
Westsel-Oviatt Lumber Company	21,744	6
Southern California Edison	21,720	6
Fiberboard Corporation	11,342	3
Other owners	123,261	34
TOTAL	**367,082**	**100**

From 1992 to 2003, the CDFFP accepted THPs covering 367,082 acres in the Southern Forest District. There are approximately 3.0 million acres of private forest lands within the 11 counties for which THPs were submitted. Thus, about 12 percent of the private coniferous forests on private lands were harvested during this period.

Comparing these estimates of harvest with the regional values for the period 1992 to 2003 indicates that specific regions in the Sierra Nevada are being harvested at a much greater rate than indicated by forest district values. There are approximately 95,016 acres of private land in the regional analysis area. The THPs submitted for the period 1992 to 2003 covered 36,082 acres or about 39 percent of the private land in the regional analysis area. Thus, some regions of the Sierra Nevada may be experiencing harvest rates that are several times greater than the mean rate for the Sierra Nevada. Pacific fishers in these areas will be disproportionately affected by the existing THP regulations which do not adequately protect the species.

In the Southern Forest District regional analysis for the period 1992 to 2003, even-aged management covered 14 percent of the private land in the analysis area. Even more disturbing, the use of even-aged management has been increasing since 1996. Even-aged prescriptions Sierra-wide during the period 1999 to mid-2002 covered the greatest number of acres (Table 8). Sierra Pacific Industries (SPI), the major private forest landowner in the Sierra Nevada, accounted for about 31 percent of the acreage submitted under THPs in the Sierra Nevada between 1999 and mid-2002, and prescriptions utilized by SPI are dominated by even-aged management and in particular clearcutting. Considering the pace and scale of timber harvest recently completed by SPI and proposed in their long-term planning documents (Sierra Pacific Industries 1999), it can be reasonably predicted that even-aged harvest, with a particular emphasis on clearcutting, will be applied to the majority of the actively managed timberlands in the Sierra Nevada. Thus, in the near future, privately owned coniferous forests are likely to be dominated by stands less than 30 years old, with few large and very large live trees, little structure heterogeneity, and few large snags and logs. These areas will not provide suitable habitat for fisher.

3. Logging on Private Inholdings in the Stanislaus National Forest from 1990-1998

Because of large private land inholdings, the northwest portion of the Stanislaus National Forest was identified as an Area of Concern (AOC) for the California spotted owl (Beck and Gould 1992). This AOC is within the historic range of the fisher, and although currently unoccupied, it is situated in a region that would be important to the northward dispersal of fishers. To assess the type of harvest activity occurring in an area dominated by private lands important to fisher dispersal, Greenwald et al. (2000) examined timber planning documents prepared from 1990-1998 on five sites within this AOC. Sites were 8,000-acre circles where any timber planning document that had some or all cutting units within the circle were analyzed.

For the nine-year period monitored, 204 timber harvest planning documents were filed, for a total of 938,294 acres treated. Twenty-seven of these documents (18,572 acres) were filed as emergencies primarily for the removal of insect damaged trees, and 109 documents (881,595 acres) were filed as exemptions primarily to treat dead, dying, or deteriorating trees. THPs were filed in 68 instances covering 37,947 acres. The number of THPs and exemptions filed and their respective acreage varied somewhat by

year for the period 1990 to 1998 (Table 13). The patterns suggest that harvest operations were not declining over this period and appear to be somewhat stable with a slight increase after 1995.

Table 13. Harvest documents proposing activity within five 8,000-acre regions in the northwest quarter of the Stanislaus National Forest.

Year	Number of THPs	THP acreage	Number of Exemptions	Exemption Acreage	Number of Emergencies	Emergency Acreage
1990	5	3,125	14	110,894	17	11,662
1991	8	4,926	12	91,434	5	14,520
1992	6	2,255	12	12,272	0	0
1993	5	2,876	7	45,874	2	1,800
1994	7	2,753	13	74,486	0	0
1995	6	4,272	13	73,692	0	0
1996	14	7,992	15	190,087	0	0
1997	8	4,998	13	125,929	1	60
1998	6	4,750	8	104,952	2	710
TOTAL	**68**	**37,947**	**109**	**881,595**	**27**	**18,572**

In many cases, THPs were proposed in the same area as exemptions for the period between 1990 and 1999. An estimate of the total number of THPs that occurred within areas that had come under exemptions for the period of review is difficult to determine, nevertheless the following example illustrates the pattern. Exemptions were filed four times on the same 39,000-acre area each year from 1993 to 1996. During this same period and in this same area, 12 THPs totaling 7,161 acres were filed. The harvest activities associated with these timber harvests removed habitat elements (i.e. large trees, large snags, multi-layered canopies) required to maintain fisher habitat. Despite the magnitude of effects to fishers, the impacts of these logging activities on the fisher or its habitat are not disclosed or mitigated in the harvest documents.

Since the required documentation for emergencies and exemptions is limited to a one to two page application, the detailed review from Greenwald et al. (2000) focused on the more extensive information provided in the 68 THPs. The vast majority of the THPs were submitted by industrial forest operations (61 THPs covering 37,457 acres). As can be seen in Table 13 above, the number of acres harvested in THPs has increased somewhat from 1990 to 1999. Importantly, the type of prescription used most frequently over that period also has changed. Early in this period, clearcutting was used occasionally, whereas after 1995, this prescription became dominant in the THPs reviewed. This pattern also is reflected in statistics gathered from THPs throughout the entire Sierra Nevada for the period 1994 to 1999. Between 1994 and 1999, there was a seven-fold increase in acres harvested with a clearcut prescription on private timberlands in the Sierra Nevada (Table 14).

Table 14. Data reported from California Department of Forestry.

Prescription	Acres Harvested					
	1994	1995	1996	1997	1998	1999
Clearcut	1,197	577	3,673	2,042	4,785	8,600
Other prescriptions	40,181	33,548	60,725	27,822	18,519	13,982
Clearcut as a Proportion of Total Acres Harvested	2.9	1.7	5.7	6.8	20.5	38.0
Total Number of THPs	221	206	223	146	140	110

None of the THPs reviewed by Greenwald et al. (2000) identified the cumulative effects of the numerous timber sales occurring in and around each of the five areas. Further, of the 68 THPs, only four

mention the presence of late successional forests in the analysis area, and none identify impacts to late successional forests. Three of the THPs identify that fishers were sighted in the area in 1965, but no additional mitigation measures for this species or others associated with late-successional forests were identified.

In sum, past and ongoing timber practices on private lands have resulted in a highly fragmented landscape with heavily thinned forest having few trees over 54 cm (21 inches) DBH, further fragmented by large gaps in forested vegetation created by even-aged management. This vegetation pattern is more extensive north of Yosemite National Park, presenting a serious challenge to fisher dispersal from the populations in the southern Sierra Nevada northward.

b. Northern California

Logging in northern California on both private and federal lands has resulted in substantial loss and fragmentation of late successional forests and fisher habitat. The continued persistence of fishers in northwestern California may be due to sprouting ability of the evergreen hardwoods and redwoods that flourish in this region, enabling the forest canopy to recover after logging more rapidly than in other parts of the fisher's range in California (Carroll et al. 1999). However, although fishers persist in northern California in greater numbers than elsewhere on the West Coast, there is evidence that logging has resulted in reduced fisher densities (Truex et al. 1998).

The current northern California range of the fisher includes four national forests—the Six Rivers, Mendocino, Klamath and Shasta-Trinity—found in six counties (Del Norte, Humboldt, Mendocino, Siskiyou, Shasta, and Trinity Counties). Roughly 80 percent of the forested area in the three coastal counties (Del Norte, Humboldt, and Mendocino) is privately owned, including large tracts of industrial timberlands (Waddell and Bassett 1996). In contrast, a majority (about 62 percent) of the forested area in the interior counties is publicly owned (Waddell and Bassett 1997).

Logging in northern California has been a mix of clearcutting and selective methods. Clearcutting is the predominant method in moister coastal and more northerly forests, but has occurred in all areas. Regardless of method, however, logging in northern California has resulted in substantial loss of late-successional forests and high-quality fisher habitat.

Bolsinger and Waddell (1993) estimated there are roughly 668,250 acres of old-growth on federal lands in northern California or roughly 14.9 percent of the forest acres. Considering that old-growth may have occupied as much as 70 percent of the landscape prior to European settlement (USDI 1990), this indicates old-growth in northern California may have declined by as much as 79 percent on federal lands in northern California. Similarly, Morrison et al. (1991) estimated there were 798,300 acres of old-growth on the western portions of the Klamath and Shasta-Trinity National Forests, and all of the Six Rivers National Forest. In contrast, FEMAT (1993) estimated that there are 1,470,800 acres of multi-storied stands with trees over 54 cm (21 inches) DBH, which they characterized as late-successional, on federal lands in northern California, equal to roughly 32.8 percent of federal lands. Although not characterized as old-growth by Bolsinger and Waddell (1993), some of the additional acres identified by FEMAT (1993) probably provide habitat for the fisher. However, more than half of these acres occur at elevations greater than 1,200 m, indicating a much smaller proportion of the landscape within the elevational range utilized by the fisher supports late-successional forests as defined by FEMAT (1993). In addition, according to FEMAT (1993) "late-successional / old-growth forests" on federal lands are "typically highly fragmented by harvested areas and stands of younger trees." Fragmentation likely makes many old-growth forest stands unavailable to the fisher because of its aversion to crossing areas of little forest cover (Rosenberg and Raphael 1986, Powell 1993).

On private lands in northern California, most stands are even-aged and less than 100 years old (Waddell and Bassett 1996, 1997). Bolsinger and Waddell (1993) estimated there were only roughly 780,800 acres of old-growth on private lands in the north coast and north interior resource areas of California, a portion of which is outside the present range of the fisher. This amounts to roughly 15.7 percent of private lands in these areas (Waddell and Bassett 1996, 1997). Many of these stands, however, have been entered for harvest (Bolsinger and Waddell 1993). Bolsinger and Waddell (1993), for example, concluded that:

"On private lands, most of the 1,423,000 acres classified as old-growth [in Washington, Oregon and northern California] consist of stands from which old trees have been removed. Mixed-conifer stands in California make up the bulk of these forests. They have been selectively logged one to several times over the past century, but they still contain three of the four major elements of the ecological definition of old-growth forest—mature or overmature trees, multilayered canopy with several age groups represented, and snags and coarse woody material on the ground."

The proportion of these stands that provide high-quality habitat for the fisher is unknown. However, remaining old-growth on private lands is probably even more fragmented than on federal lands. FEMAT (1993), for example, concluded:

"Late-successional/old-growth stands that remain on private and state lands tend to typically occur in small patches surrounded by cutover areas and young stands."

Carroll et al. (1999) documented gaps in fisher distribution within a 67,000-km^2 study area in the Klamath region of northwestern California and southwestern Oregon and adjacent portions of the northern California coast. The authors expressed concern (at p. 1357) that "land-use strategies that incorporate short timber harvest rotations may isolate remnant areas of fisher habitat," a trend that is particularly troubling in the coastal region which is largely in private ownership. Moreover, little low-elevation forest is contained within existing protected areas, thus conservation of the fisher will depend on multi-ownership cooperative management at the regional scale (Carroll et al. 1999). Unfortunately, forest practices rules governing logging on private lands are grossly inadequate to protect fisher habitat.

Loss, degradation, and fragmentation of late successional forests because of clearcutting and selective logging in northern California have resulted in substantial loss of fisher habitat with likely negative effects on the fisher. Although studies on the direct effects of logging on the fisher in northern California are limited, information in both Buck et al. (1994) and Truex et al. (1998) indicate that loss of habitat because of logging has affected the fisher population in northern California. Buck et al. (1994), in a study comparing the fisher's use of adjacent lightly and heavily harvested areas in northern California, found that fishers were more selective in the heavily harvested area, avoiding areas where most of the conifer overstory had been removed. They further speculated that by reducing the quantity and distribution of highly suitable habitat, logging may force fishers into sub-optimal habitat, ultimately increasing fisher mortality and lowering reproduction, concluding:

"If timber management practices create timber-types that are sub-optimal, then survival and reproduction of fishers should decrease within these timber types. Some evidence supports this hypothesis: 7 radio-collared fishers died during our study—2 adult males, 1 adult female and 4 juveniles. All were recovered in habitats considered sub-optimal by our analysis: clear-cuts, areas without overhead canopy cover, and hardwood dominated stands."

Similarly, Truex et al. (1998) found that fisher densities were lower and home ranges larger in their Eastern Klamath Study Area than in their North Coast Study Area and speculated that this was because of observed "poorer habitat quality" on the former due to extensive clearcutting, concluding:

"A number of independent indices of forest structure, habitat use, and demography suggest that the eastern Klamath population occurs in poorer habitat and may be more characteristic of 'sink' habitat than either of the other study areas."

Both of these studies suggest that reductions in the quantity and quality of fisher habitat because of logging in northern California have reduced fisher density and survivorship. The negative effects of logging on fisher populations in northern California continue to the present day.

Similar to the Sierra and Sequoia National Forests in the Sierra Nevada, Greenwald et al. (2000) quantified effects of logging and other projects on the fisher on the Klamath, Six Rivers, Shasta-Trinity and Mendocino National Forests by requesting and reviewing all Biological Evaluations (BEs), Environmental Assessments (EAs) and other decision documents for projects where the agency concluded "may affect individual fishers, but is not likely to lead to a trend towards listing," since the Northwest Forest Plan was enacted in 1994 until 1998. Documents were obtained through the Freedom of Information Act.

Klamath National Forest

Between 1994 and 1998, the Klamath National Forest planned or carried out 52 projects where a biological evaluation concluded that the project "may affect" individual fishers, including 32 timber sales, 8 general projects, 3 prescribed burns, and 3 road, 3 mining, and 3 recreation projects. Fishers were sighted, found in surveys, or occurred in a historical record in the vicinity of 23 of these projects. Most projects were not surveyed for fishers, however.

Timber sales potentially affected at least 23,177 acres and removed at least 70 million board feet. Salvage logging was the most commonly identified prescription (18), followed by thinning (15), sanitation (5), shelterwood (5), overstory removal (2), group selection (2), and clearcutting (2). All of these prescriptions potentially led to removal of structures associated with high-quality fisher habitat, such as canopy cover and large snags, trees, and logs.

Five of the eight general projects were gopher poisoning, which, as mentioned previously, could lead to poisoning of fishers. Other general projects included forest clearing for a powerline, watershed restoration, and forest disease control. Road projects included reconstruction of a road and various road maintenance tasks. Mining projects included permits for two separate mines and drilling of exploratory wells. Recreation projects included construction of a corral and trail maintenance.

Mendocino National Forest

From the time the Northwest Forest Plan was enacted until 1998, the Mendocino National Forest planned or carried out 31 projects that may have affected individual fishers, including 21 timber sales, 5 general projects, 4 recreation projects and 1 burn. Surveys for fishers were not conducted in association with these projects, but fishers were sighted in the vicinity of seven of the projects.

Salvage was the most commonly identified prescription for timber sales (10), followed by thinning (3) and shelterwood (1). Greenwald et al. (2000) lacked information on prescription for a number of sales because they only received biological evaluations and not environmental assessments, which are generally more detailed. Timber sales potentially affected at least 8,622 acres and removed at least 51.3 million board feet.

General projects, which included tree planting and wildlife habitat enhancement, probably had fairly minor effects. The two road projects were both permits for hauling timber and the four recreation projects were all OHV events. Both timber hauling and OHVs have the potential to disturb fishers.

Shasta-Trinity National Forest

Between 1994 and 1998, the Shasta-Trinity National Forest conducted 23 projects where it was determined that they "may affect" individual fishers, and 13 where it was determined that they will "likely" affect individual fishers, but not lead to a trend towards federal listing. Timber sales accounted for 32 of the projects, with 2 general projects and 2 road projects accounting for the remainder. Fishers were sighted in the vicinity of 12 of the projects with most of the remainder not surveyed.

Timber sales potentially affected at least 30,900 acres and removed at least 51.9 million board feet. Salvage and hazard tree logging were by far the most commonly identified prescriptions (25), followed by thinning (8), sanitation (5), overstory removal (3), group selection (1), and clearcutting (2). As noted previously, all of these prescriptions can result in the removal or degradation of fisher habitat.

The two general projects consisted of construction of a phone line and a land exchange, and the two road projects consisted of a maintenance project and a programmatic evaluation of road use permits, with varying effects on the fisher.

Six Rivers National Forest

Between 1994 and 1998, the Six Rivers National Forest conducted 36 projects where it was concluded in a biological evaluation that the project "may affect" the fisher, including 17 timber sales, 11 road projects, 5 prescribed burns, 2 general projects and 1 recreation project. Fishers had been recorded in surveys or sighted in the vicinity of at least 18 of these projects.

Timber sales potentially affected at least 11,152 acres and removed 37.7 million board feet. The most commonly identified prescription was thinning (10), followed by salvage (6), clearcutting (3) and

shelterwood (1). Clearcutting probably produced the most volume, as the Pilot Creek Ecosystem Management Project, which included clearcutting, was expected to remove roughly 15 million board feet alone. Seven fishers, some known to have reproduced, were found in this timber sale's project area.

Road projects consisted of both maintenance and construction and likely contributed to habitat fragmentation for the fisher. The effects of the five prescribed burns on the fisher are unknown at this time. The two general projects consisted of construction of a fireline and a lookout tower. Construction of a trail and maintenance of a campground was the one recreation project.

In sum, from 1994 to 1998, the four national forests planned or conducted 155 projects where it was determined that fishers may be affected. These determinations were made by qualified biologists who were required to visit the project sites before making their determination. Considered alone, any one of these projects might not lead to a trend towards federal listing. Considered cumulatively and in the context of considerable past habitat loss and degradation, however, it is clear that Forest Service projects potentially had a substantial impact on fisher habitat. Significantly, this analysis did not consider the numerous timber sales and other projects occurring on private lands in northern California.

A majority of "may affect" determinations (105 of 159; 66 percent) resulted from timber sales with salvage logging being the most commonly identified prescription. This is of concern because salvage logging removes large snags and logs used by the fisher for resting and denning and because requirements for "green tree retention" under the Northwest Forest Plan do not apply to salvage sales. Other prescriptions, such as thinning, clearcutting, overstory removal, and shelterwood, have also led to loss of fisher habitat.

A number of more recent timber sales (since 2000) have been proposed on the four national forests in the range of the Pacific fisher in northern California. Table 15 below provides a partial list of these proposed logging projects that originally targeted large trees for harvest on a combined total of ≥67,888 acres. Many of these sales harvested large trees in late successional reserves. We gathered this information from the Forest Service's online Schedules of Proposed Actions. Table 15 only includes a portion of projects proposed because many of the older SOPA lists were currently unavailable online, and in some cases acreages of projects were not included in the SOPA list and thus were not included in our tally. Moreover, many smaller sales that likely removed larger trees were listed as Categorically Excluded (CE) and the SOPA list provided no acreages for these sales. Several of the larger timber sales were cancelled after objection by conservation groups, or are currently being opposed in court, while some have been implemented or are in the early planning stages. However, as Table 15 demonstrates, the push by the Forest Service to implement timber harvest projects that target larger-sized trees continues to threaten remaining habitat for the imperiled population of fishers in northwestern California, and clearly indicates that existing regulations are failing to adequately protect fisher habitat.

Table 15. Partial list of major timber sales on four national forests within the range of the Pacific fisher in northern California, 2000-2007. Acreage includes estimate of old-growth forest.

TIMBER SALE	ACREAGE	TIMBER SALE	ACREAGE
SHASTA-TRINITY NATIONAL FOREST		**KLAMATH NATIONAL FOREST**	
Upper Dubakella	1,000	Knob	578
East Fork	2,077	Meteor	912
East Fork II	1,000	Elk Thin	388
Beegum Corral Regan	2,400	HCFP03	100
Beegum Rock	490	Jack Conventional	677
Lower Hayfork	1,298	Beaver Creek	975
Browns	787	Horse Heli	1,680
Eagle Ranch	264	Uptown	760
North Whitney	280	Westpoint	1,026
Slate Thin	360	Whittler	760
New River	4,630	Erickson Thin	2,556
Clear Creek	1,980	Five Points	1,701
Hemlock	4,725	**SIX RIVERS NATIONAL FOREST**	
Edson	290	Journey Fire Salvage	97
Powder	2,934	Deadwood	340

Pilgrim	3,780	Hazel	800
Ten Flat Thin	261	Weaver	920
Gemmill	1,700	Dome (LSR)	153
Jones Thin	540	Sims Fire Salvage	169
Algoma	4,700	Orleans	2,721
Mudflow	3,000	Big Flat	1,000
Porcupine	4,300	Little Doe/Low Gulch	923
Pettijohn	780	Megram Fire Salvage Phase I	1,118
East Fork Texas Spider	2,000	**MENDOCINO NATIONAL FOREST**	
		Cold Chimney/Spanish/Ocean	706
		Divide Auger	327
		Blands	925
	TOTAL		**67,888**

The environmental analyses for many of these projects demonstrate the inadequacy of current protections for fisher on national forest lands in northern California. The March 2006 Environmental Assessment for the 2,934-acre Powder Vegetation and Fuels Management Project in the Shasta-McCloud Management Unit of the Shasta-Trinity National Forest provides a good example of the lack of consideration for fisher habitat on the individual project level, especially for cumulative impacts on fisher habitat in the region. The administrative appeal of the Powder project by the Klamath Forest Alliance and Conservation Congress noted that fisher were documented in the Shasta-McCloud Management Unit by the Forest Service's Redwood Sciences Lab, and on surrounding private lands on the McCloud Flats and in the Sacramento River Canyon Area. However, no specific surveys for fishers were conducted on the Powder project site, and no mention was made of fishers in the Environmental Assessment (the EA simply discussed "carnivores"). Moreover, as the appeal noted, there had been a major increase in the number of acres proposed for thinning down to 40 percent canopy cover on national forest land between the Goosenest Ranger District and Shasta-McCloud Management Unit, including such projects as Davis, Hemlock, Edson, Mountain Thin, Little Horse Salvage, Tennant WUI, Tamarack, Pomeroy, and Erickson Thin, totaling more than 50,000 acres. This was not considered in the environmental analyses. The Forest Service's decision on the Powder project was overturned in court. Since that time, an additional sale in the Shasta-McCloud Management Unit, the 3,780-ac Pilgrim Vegetation Management Project, was approved in June 2007. This project would harvest old-growth trees on a 415-acre unit and depart from the Shasta-Trinity Forest Plan's green-tree retention standard of leaving the largest and oldest trees on 15 percent of the area (Pilgrim EA at pp. 2-3). The U.S. Fish and Wildlife Service had determined that the project would have an adverse effect on designated spotted owl critical habitat (owls occupy relatively similar habitats as the fisher), nonetheless the project was approved.

These projects, together with logging on adjacent private lands, fragment the landscape and reduce the ability of the fisher to persist and recover. Carroll et al. (1999 at p. 1357) noted that "[m]aintaining viable and well-distributed fisher populations may require increased levels of canopy closure and retention of large hardwoods on managed lands." Clearly, without vigilant oversight by conservation groups, fragmentation and degradation of fisher habitat would be substantially worse. However, forcing private citizens to provide continued oversight of poorly planned logging projects is not an adequate safety net for fishers, as there are no assurances that conservation groups will continue to watchdog Forest Service projects in the future.

In conclusion, logging has resulted in substantial historical loss of fisher habitat on both public and private lands throughout the Sierra Nevada and northern California and continues to present a major threat to the continued existence of the species.

II. Roads

Roads also have significant effects on fisher habitat. Roads result in the loss and fragmentation of habitat, create barriers to fisher dispersal, cause death directly through vehicular collisions, and allow access to poachers and legal trappers who may incidentally capture and kill fisher (Freel 1991, Dark 1997, Witmer et al. 1998, Wisdom et al. 2000). Areas with higher road densities have also been found to support lower densities of large trees, snags, and downed logs than areas with fewer roads because of the access

provided for fuelwood cutting and logging (Quigley and Arbelbide 1997). Campbell (2004) found that sample units with track stations where fishers were detected had significantly fewer roads than unoccupied units in the Sierra Nevada. Campbell (2004) also found that "at coarser spatial scales, sample units within the fisher region were negatively associated with precipitation, road density and habitat variability." This result indicates that fishers are associated with lower-elevation areas of contiguous forested habitat with fewer roads.

The fisher's historic range in California – particularly in the northern Sierra Nevada – is heavily dissected by roads. In the Sierra Nevada, a total of 25,000 miles of road have been constructed on public lands alone (USDA 2001). Similarly, a total of 109,443 miles of road have been constructed in Oregon, Washington, and northern California on federal lands in the range of the northern spotted owl (FEMAT 1993). Countless more roads have been constructed on private lands. Numerous large state and interstate highways create barriers for the fisher, limiting recovery and isolating existing populations. For example, all of the known fisher locations in the Sierra Nevada occur south of the southernmost of four major highways that cross the range (Zielinski et al. 1997a). These highways probably contributed to declines of the fisher in the central and northern Sierra and are likely a barrier to reconnecting the southern Sierra and northern California populations. In a review of issues related to the conservation of the fisher in the Interior Columbia Basin, Witmer et al. (1998) concluded:

> "Barriers to movement may include large nonforested openings and highways. Maintenance of links between individuals and populations will require elimination or reduction of these barriers."

However, no plans have been proposed to facilitate fisher dispersal across the four major highways that cross the species' Sierra range. Mortality associated with roads poses a serious threat to small fisher populations, especially in the southern Sierra. Indeed, at least eight fishers were documented as killed by vehicles in California in the mid-1990s (Chow personal communication, Zielinski et al. 1995a, Truex et al. 1998), and one Forest Service Biologist (S. Anderson) reported that road-killed fishers are "relatively common" in the Sequoia National Forest (Zielinski et al. 1995a). Campbell et al. (2000) concluded:

> "Loss of individuals from a small isolated population may hasten decline. Of particular concern are collisions between fisher and vehicles. Many records of fisher locations are in the form of roadkills."

Truex et al. (1998) recommended that increases in paved roads or vehicle speed should be discouraged in areas managed for fishers. Increase in road densities throughout the Sierra Nevada resulting from urban development, logging, and recreation in fisher habitat is likely to exacerbate this problem.

III. Urban Development

Development of private lands is a threat to the fisher throughout its range, having much the same effect on habitat as does logging. McBride et al. (1996) measured forest conditions in both developed and undeveloped areas in various forest types of the Sierra Nevada, including red fir-lodgepole pine, mixed conifer, ponderosa pine, and foothill woodland. The authors found that in all forest types human settlement reduced tree canopy cover and density, stating:

> "Construction of structures, roads, and other infrastructure elements in forests often necessitates the removal of trees and results in reduction of canopy cover and tree density. Trees may also be removed to facilitate access to sunlight, especially in more densely wooded areas. Conversion of tree cover to lawn also contributes to the decrease in tree canopy cover and density."

Average canopy cover in mixed conifer was 92 percent in control areas compared to 64 percent in developed areas (McBride et al. 1996). Similarly, in ponderosa pine, average canopy cover was 90 percent in control areas compared to 62 percent in developed areas. The more concentrated the development the greater the proportion of converted land. McBride et al. (1996) found that in areas where lots were one acre, a greater proportion (41 percent) of the surface area was covered by impervious materials, such as structures and roads, than in either the three to five acre or 10 to 20 acre lot sizes. These larger lot sizes both had approximately 7.5 percent of the area covered by impervious material. Thus, as with logging, development reduces the density and cover of forests, and when combined with the disturbance from noise, traffic and other human activities, is counter to maintaining fisher habitat.

Population growth has been dramatic in California and is predicted to continue. The human population of the Sierra Nevada, for example, doubled from 1970 to 1990 and is approximately four times the peak populations of the gold rush (1849-1852) (Duane 1996a). Further, the population is predicted to triple from 1990 levels by 2040. Development in California is resulting in direct conversion of forest land in the historic range of the fisher (Table 16).

Table 16. Loss of productive forest land to roads, and agricultural and urban development on private lands in the California range of the Pacific fisher.

Area	Acres of forest converted to:			Total (acres)	Period	Source
	Roads	Agriculture	Urban			
Northern and central Sierra	7,000			7,000	1984-1994	Waddell and Bassett 1997a
N. Coast California	17,000	9,000	21,000	47,000	1984-1994	Waddell and Bassett 1996
N. Interior California	8,000			8,000	1984-1994	Waddell and Bassett 1997b

Throughout the entire range of the Pacific fisher in the United States, Bolsinger and Waddell (1993), estimate that productive forest lands declined by three million acres from 1930 to 1992 in California, Oregon, and Washington and concluded that "the major causes of the decrease in forest area were construction of roads, reservoirs, powerlines and clearing for urban expansion and agriculture."

In the 1980s alone, losses of forest area in Washington were nearly 300,000 acres, mostly in western Washington (Maclean et al. 1992, McKay et al. 1995). In western Oregon, 247,000 acres of forest were lost between 1961 and 1986 (MacLean 1990) and the north coast area of California lost 47,000 acres of forest between 1984 and 1994. These statistics only consider forested lands that were directly converted to another use, such as a house or a road. Numerous other areas have been invaded by dispersed development. Bolsinger et al. (1997) estimated that a total 424,000 acres of large, contiguous blocks of forest, which they termed "primary forest," were lost in Washington State between 1980-1991, mostly in western Washington. We lack similar estimates for recent loss of primary forest in California, but given the extent of population growth here, losses are probably on the same order as in Washington.

Zielinski et al. (2005a) correlated changes in fisher distribution in the Sierra Nevada in relation to changes in human density as represented by United States census maps of housing density from 1930 to 1990 (Figure 5). The authors noted (at p. 1403) that the fisher:

> "occurs at a relatively low elevation which puts it in closer proximity to human activities than the congeneric marten. Interestingly, the gap in the fisher historical distribution aligns well with the area of greatest increase in human influence... In these areas, homes are built in fisher habitat, roads are more common, the forests around the built environment developments are managed to reduce forest density, and there is long history of private land management for timber (compared with public land managed for multiple uses). These factors probably conspire to render home range areas less suitable, leading to the contraction of the range in this area."

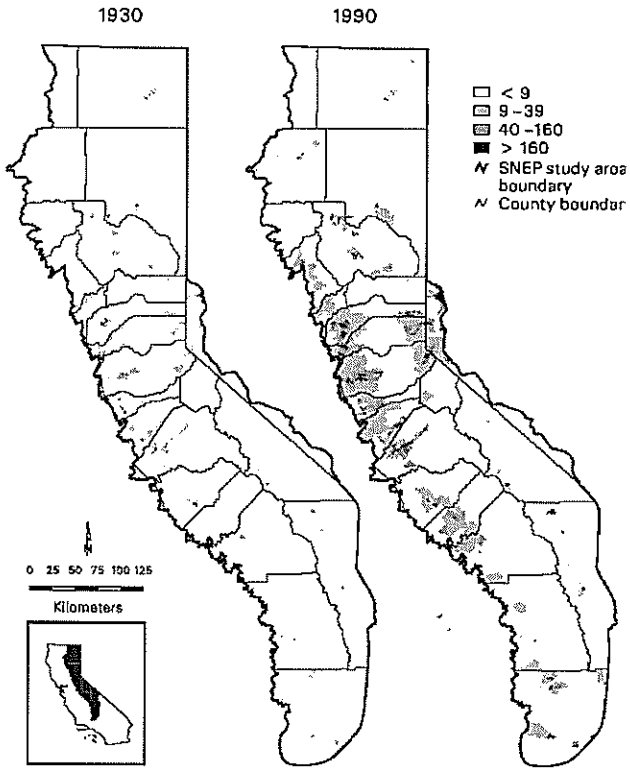


Figure 5. Housing densities per square mile in 1930 and 1990 for the Sierra Nevada from U.S. Census Bureau data. From Zielinski et al. (2005a).

The increase in roads and infrastructures such as water tanks that occur with urban development is likely to have significant impacts on the extremely small population of fishers in the southern Sierra Nevada. At least nine fishers have been documented as being trapped and killed in water tanks in recent years, and numerous fishers have been killed by vehicles. Specific protections to reduce fisher mortalities in urban areas where fishers occur are needed as part of a comprehensive recovery plan—measures that would be possible with a listing of the fisher under CESA.

IV. Recreation

Recreation can affect fishers negatively through noise and direct disturbance by people. If such disturbance occurs regularly on particular trails or roads it can result in loss and fragmentation of habitat. Loss of habitat also can occur from construction of infrastructure for recreation, for example, roads or ski slopes. In a review of the effects of proposed management on forest carnivores in the Sierra Nevada, Campbell et al. (2000) provided the following summary of the potential effects of recreation:

> "That recreational activities can have substantial impacts on wildlife species is widely acknowledged, but this relationship is poorly understood... Recreation activities can alter behavior, cause displacement from preferred habitat, and decrease reproductive success and individual vigor. Peak recreation levels often coincide with the most critical phases of the species life cycle such as during breeding and reproduction. Flight from human presence and interruption of behavior increases energetic costs experienced by an individual."

Recreational use and impacts are particularly intense in the southern Sierra. Duane (1996b) estimated that in 1996 there were 50 to 60 million "recreation visitor days" (RVDs) per year in the Sierra Nevada, of which two thirds occur on national forest lands. These RVDs were concentrated in the southern Sierra with potentially negative consequences for the existing fisher population. Duane (1996b) stated:

"The Inyo, Sequoia and Sierra National Forests—each of which is adjacent to at least one of the national parks in the southern and central Sierra Nevada—account for 45% of all RVDs on the USFS lands in the Sierra Nevada. Together with the national parks, this portion of the Sierra Nevada probably represents one of the highest levels of recreational activity in the entire world."

Considering that the population of California is expected to double or even triple by 2040 (Duane 1996a), recreational activities are likely to also grow, resulting in further loss of habitat and disturbance to the fisher. Duane (1996b) noted that just because population doubles or triples does not necessarily mean there will be twice as many RVDs, but also concluded:

"Even without a proportionate doubling of demand, however, conflicts are likely to increase between recreational activities and other uses of public lands and resources."

Substantial recreational use also occurs in other portions of the Pacific fisher's range on both national park and national forest lands. Redwood, Sequoia, Kings Canyon, and Yosemite National Parks are all in the range of the fisher and all receive significant numbers of visitors (Table 17). The effects of recreation on the fisher or its habitat in these national parks have not been explored. However, well-used roads and trails in these parks have probably resulted in some level of habitat fragmentation and probably impede fisher movement and dispersal.

Table 17. Number of visitors to national parks in the California range of the fisher in 1999.

National Park	Visitors
Sequoia	873,229
Kings Canyon	559,534
Yosemite	3,493,607
Redwood	369,726

The types of recreation allowed in national forests have the potential to do more harm to fishers than in national parks. Activities, such as OHV races, which are not allowed in national parks, have a greater likelihood of resulting in disturbance to the fisher. The amount of development in support of recreation is also potentially greater on national forests, including construction of ski slopes and RV campgrounds.

V. Poaching and Incidental Capture

Trapping of fishers for their fur was one of the primary causes of the decline of the species across the United States in the first half of the twentieth century (e.g. Powell 1993). Many studies of fisher demography involve populations that have been subjected to trapping mortality (see citations in Powell and Zielinski 1994). Trapping is a critical factor influencing fisher demography, "replac[ing] natural population fluctuations with fluctuations caused by periods of overtrapping followed by recovery when trapping pressure decreases," (Powell and Zielinski at p. 44). In response to concern over severe declines in number of fishers caught, legal trapping of fishers was prohibited in California in 1946 (Lewis and Zielinski 1996). Poaching and incidental capture and injury, however, remain threats to the fisher.

Lewis and Zielinski (1996) report that trappers and California Department of Fish and Game biologists had information demonstrating recent occurrence of poaching and illegal sale of pelts. Fishers are easily caught in traps set for other furbearers, such as fox or bobcat (Powell and Zielinski 1994). Lewis and Zielinski (1996) estimated an incidental capture of 1 fisher per 407 set-nights and a mortality-injury rate of 0-75 percent, based on data from trappers. Poaching or incidental capture can potentially affect fisher populations, even if it is a relatively rare occurrence. Powell (1979) predicted that mortality of as few as 1-4 fishers per 100 km^2 was sufficient to result in decline of a population in the Midwest. An increasing number of trapping licenses sold in California in the late 1970s and early 1980s may have resulted in more incidental fisher captures, particularly considering that trappers can cover much larger areas and have greater access to remote areas due to an increase in roads. Lewis and Zielinski (1996) added:

"The magnitude of the effect of additive mortality would depend on the sex and age of the captured individuals (Krohn et al. 1994), and may be greater in western populations since they have not demonstrated the rapid population recovery after protection that has been observed in eastern populations...[T]he potential effects of legal trapping of other species on protected fisher populations

should not be ignored, especially when considered in conjunction with habitat loss...and other sources of mortality (e.g., road-kills)."

California has recently banned leg-hold traps and snares by citizen initiative, which should help reduce risk of fisher injury or mortality with incidental capture. USDA and USDI (1994) recommended closing all national forests in the range of the northern spotted owl to trapping for American marten because of similarity of appearance of martens and fishers, but this was not ultimately adopted in the Record of Decision for the Northwest Forest Plan.

VII. Natural Events

a. Predation

Predation appears to be an important source of mortality for the fisher (Buck et al. 1994, Truex et al. 1998). On the Hoopa reservation in 2007, 3 of 12 denning females were killed by predators (Coastal Martes Working Group notes; 14 June 2007). Of 16 known mortalities recorded by Truex et al. (1998), from radio-collared animals, nine were suspected to have resulted from predation. Similarly, Buck et al. (1994) documented that four of seven mortalities in northern California resulted from predation. Potential predators include other carnivores, such as mountain lion, bobcat, and coyote, and large raptors, such as golden eagle, great horned owl, or northern goshawk (Powell 1993, Powell and Zielinski 1994, Truex et al. 1998). Truex et al. (1998), for example, documented several mortalities, including suspected predation from coyotes in two cases, one mountain lion, and an unidentified raptor. Bobcats are a significant predator of fishers on the Hoopa reservation (Coastal Martes Working Group notes; 14 June 2007). The fisher may be more susceptible to predation in areas with less forest cover and thus logging may expose them to additional risk (Buck et al. 1994).

b. Forest Fire

It is widely recognized that many western forest types historically were influenced by frequent fires, including ponderosa pine and mixed conifer forests of the Sierra Nevada and Klamath/Siskiyou Region, and that loss of fire from these systems because of livestock grazing, fire suppression, and other factors combined with intensive, widespread logging has resulted in changes to forest structure (Agee 1993, Covington and Moore 1994, Kilgore and Taylor 1979, Swetnam and Baison 1994, Swetnam et al. 2000, Quigley and Arbelbide 1997, Weatherspoon et al. 1992). Very large areas burned by crown fires may pose a risk to existing fisher territories and habitat, although this issue needs further research.

Creating a quandary for land managers, solutions to the problems of increased fuel loadings and likelihood of crown fire, such as prescribed fire and thinning, also pose some risk to fisher habitat. For example, large trees and snags required for resting and denning by fishers, which are already at low levels in the Sierra Nevada (Franklin and Fites-Kaufman 1996), could potentially be further reduced by fuels treatments.

While experts have suggested that there may be a risk that fisher territories and habitat can be altered by crown fire, late-successional, mixed conifer forests where the fisher is generally found are at lower risk of crown fire than other seral-stages and forest types. High canopy closure, which keeps fuels moist, and large trees, which are generally fire resistant, make late-successional, mixed conifer forests less likely to burn at high severities. Weatherspoon et al. (1992), for example, state:

> "Countryman's (1955) description of fuel conditions within old-growth stands applies in large measure to fuel conditions within many mixed conifer stands used by the California spotted owl. These stands are less flammable under most conditions, because the dense canopies maintain higher relative humidities within the stands and reduce heating and drying of surface fuels by solar radiation and wind."

Although the above quote is specifically discussing risk to the owl, the same conclusions can be drawn for the fisher because it uses similar habitat. USDA (2000), in a discussion of fire risk in the Sierra Nevada, determined that only 5 percent of areas designated as "old forest emphasis areas" were categorized as having the highest fire hazard and risk, compared to 25 percent for the Sierra Nevada as a whole. The document concludes:

"The highest hazard and risk areas were often adjacent to (rather than within) patches of old forests, California spotted owl PACs, and critical aquatic refuges."

In addition, the fisher's aversion to human activity and high-use roads (Dark 1997) means they are less likely to occur in areas where human-caused fires would be most frequent.

All of these factors indicate that a cautious approach to fuels treatments should be taken that does not compromise fisher habitat in the short-term in order to save it from an unknown risk presented by future catastrophic fire. Such an approach should focus on prescribed fire and limited thinning of small trees in areas of highest risk.

Moreover, there are likely to be some benefits to fishers from fire, possibly even higher severity fire. For example, management of fisher habitat, particularly in the southern Sierra Nevada population, must involve consideration of hardwoods, as research has indicated that hardwoods comprise a significant proportion of resting sites and hardwood habitat types likely provide key habitat for prey species. Zielinski et al. (2004a) noted that black oaks – which are particularly important for fishers – regenerate best in open conditions after a disturbance, and appear to have declined due to fire exclusion.

A multi-party effort including scientists, stakeholders, and government agencies are working on an assessment of the southern Sierra fisher population and how this population might respond to fire and timber harvest. As part of this effort, the Conservation Biology Institute was contracted by Region 5 of the Forest Service to model how probability of occupancy might be affected either by 'similar to historic' or 'higher than historic' future fire regimes, as well as by alternative forest management prescriptions to reduce fire risk. A progress report was released in December 2007. Information within the report should prove useful for determining whether and how to appropriately manage fisher habitat from a fire-risk perspective. However, any conservation recommendations within the assessment would not be mandatory nor would it address the myriad other impacts to fishers throughout California. Thus the development of this document nor of any other voluntary conservation plan does not supplant the need for listing the fisher under CESA.

c. Population Size and Isolation

Independent of any anthropogenic factors, fisher populations may be at risk of extinction solely because of isolation and small population size, particularly the southern Sierra population (Truex et al. 1998, Campbell et al. 2000, Lamberson et al. 2000, Spencer et al. 2007). Small, isolated populations are at risk of extirpation because of demographic and environmental stochasticity and inbreeding depression and Allee effects.[1] Inbreeding significantly decreases time to extinction for small populations (Brook et al. 2002). These factors can lead to irreversible population crashes (e.g. Hanski and Moilanen 1996). Campbell et al. (2000), for example, concluded:

"Low population densities combined with low reproductive rates and relatively high individual longevity hampers recovery from impacts and retards the ability to recolonize areas from which they have been extirpated, even in the presence of suitable habitat."

The southern Sierra fisher population probably numbers fewer than 300 total individuals and fewer than 120 adult females (Spencer et al. 2007). The northern California population is estimated to number <750 individuals (Nichols 2006). The very small size of both of these populations places them at great risk of extinction from declines related to demographic and environmental stochasticity such as fluctuations in gender ratio or climatic events that result in reduced prey abundance or poor fisher survival (Pimm et al. 1988). Such risk is increased by the isolation of these populations, which ensures that when population declines occur there will be no immigration to rescue the populations. Isolation also places the two California populations at significant risk from inbreeding depression. Indeed, Drew et al. (2003) and Wisely et al. (2004) have already determined that remaining populations in California have lower genetic diversity compared to Pacific fisher populations in British Columbia. Finally, as a top-level predator, fishers naturally occur at low densities. This makes them inherently more vulnerable to extinction because as populations decline due to habitat loss and other factors, Allee effects become ever more likely (Pimm et al. 1988).

[1] The Allee effect is the phenomenon that for smaller populations, reproduction of individuals decreases. This effect usually disappears as populations get larger.

Wisely et al. (2004 at p. 646) noted that "the magnitude of genetic structure and lack of gene flow we found was unexpected given the relatively recent colonization of the peninsula and the fisher's large spatial requirements and long dispersal distances." Apparently, human-induced fragmentation of once relatively contiguous forest habitats increased the genetic isolation of California's remaining populations in recent times. The authors further stated that:

> "[e]rosion of remaining genetic diversity threatens these populations with inbreeding, inbreeding depression, and a reduced ability to adapt to changing environments...Of equal concern is the demographic fate of these isolated populations. Populations in the south have a smaller effective population size than northern populations. Small population size coupled with low migration rates increase vulnerability to stochastic demographic events and environmental changes. We have demonstrated isolation among populations with limited exchange, suggesting that populations on the Pacific coast have little demographie buffer from variation in the population growth rate."

Spencer et al. (2007) concluded that:

> "Populations persistence is less dependent on the total number of individuals than on the effective population size (N_e; Wright 1931). Effective population size is a measure of the rate at which genetic variation changes over time. It is inversely proportional to a population's probability of extinction, and is smaller than actual population size due to effects of population fluctuations, uneven sex ratios, age-structuring of populations, and other factors. Genetic work should therefore be used to determine N_e of the southern Sierra Nevada fisher population and its potential for future population growth. Recent genetic work on fishers suggests that this population is genetically depauperate (Wisely et al. 2004), meaning that N_e will probably be quite low (W. Zielinski, personal communication). *If effective population size is below about 50, extinction is probable over a relative short term, and population augmentation may be warranted.*" Emphasis in original.

d. Disease

Relatively little is known about diseases in fishers (Brown et al. 2006). Brown et al. (2006) report that pathogens causing potentially severe disease in closely related species of Mustelidae include rabies virus, canine distemper virus, parvoviruses, influenza viruses, corona viruses, *Brucella* spp. (cause of brucellosis), *Yersinia perstis* (cause of the plague), *Leptospira interrogans* (cause of leptospirosis), *Toxoplasma gondii* (cause of toxoplasmosis), *Dioctophyma renale* (giant kidney worm), and *Trichinella spiralis* (cause of trichinosis). Moreover, canine adenovirus (cause of canine infectious hepatitis) has killed striped skunks and members of the Canidae.

Of 28 fishers sampled from several locations in Canada, Philippa et al. (2004) found that four fishers had antibodies for canine adenovirus; four for canine coronavirus; four for parainfluenza virus type 3; four for rabies virus; and 18 had antibodies for *Toxoplasma gondii*. In a study of 31 wild-caught fishers on the Hoopa reservation in northwestern California, Brown et al. (2006) found that one fisher tested positive for canine distemper virus and 11 fishers tested positive for canine parvovirus. Canine parvovirus causes diarrhea with blood or mucus, fever, and dehydration, and would be most severe in young animals. Canine distemper virus causes respiratory disease, immunosuppression, neurological disease, and death (Brown et al. 2006). The source of these viruses is unknown, but the authors speculate that gray foxes or other carnivores as well as domestic unvaccinated dogs may be local reservoirs for these diseases. If dogs are a virus source, Brown et al. (2006 at p. 44) point out that "fishers living near humans are likely to be exposed to the virus more often than fishers with home ranges farther from human habitation." Moreover, the authors state that "both CDV and CPV have the potential to cause immunosuppression, especially of young animals, and to work synergistically with other pathogens to increase morbidity or mortality in a susceptible population." Disease issues should be a concern with potential relocation of fishers into areas from which they have been extirpated but might come into contact with extant populations (Brown et al. 2006).

INADEQUACY OF EXISTING REGULATORY MECHANISMS

"Establishing the reasons for the precarious status of the fisher populations in the Pacific Northwest may not be as important in the short term as making people aware of the status and providing federal protection for the populations. ***That the populations appear dangerously low should be sufficient to generate protection; discussions and research into the reasons should occur after protection.*** In our opinion, protection by the states of Washington, Oregon and California has not been sufficient to improve population status." (Powell and Zielinski 1994; emphasis added)

Widespread logging, road building, and development in California's forests over the last century and a half have severely depleted important components of Pacific fisher habitat, such as large trees, snags and downed logs, and multi-layered dense canopies, resulting in drastic declines and fragmentation of habitat and contributing to the extirpation or severe reduction of fishers from the northern and central Sierra Nevada and in northern California. Logging, road building, and urban development continue to affect the fisher negatively to the present day. Existing and proposed regulations on public and private lands fail to adequately protect the remaining two small, isolated fisher populations from further declines. Current multi-agency efforts to develop conservation plans for the Pacific fisher (in the southern Sierra and the West Coast) are helpful but would be entirely voluntary, and thus would not provide the legal safety net or assurances that protective measures are implemented as would a listing under CESA. Thus voluntary conservation plans can be a supplement to, but not a replacement for, legal requirements to conserve the Pacific fisher under the Endangered Species Act.

Existing regulations designed to protect the fisher and associated late-successional forests on public lands in the Sierra Nevada consist of 'furbearer networks' designated on some of the Sierra Nevada national forests, and consideration for fishers under forest plan standards and guidelines that were adopted in the 2004 Sierra Nevada Forest Plan Amendment. The Giant Sequoia Management Plan also provides regulations that impact fisher habitat on public lands in the southern Sierra. On northern California's public lands, the Northwest Forest Plan provides regulations designed to protect fisher habitat on Forest Service and Bureau of Land Management lands. The California Forest Practices Rules govern timber management practices on private lands, and various state agencies are responsible for public road building and maintenance, and permitting development on private lands. Below, we discuss current and proposed regulations in relation to their ability to safeguard the existing Pacific fisher population in California by maintaining existing habitat as well as to facilitate the recolonization of the fisher back into a larger portion of their historic range, including the central and northern Sierra Nevada.

I. Forest Service Regulations

a. California-wide

National Forest Management Act Planning Regulations

Congress enacted the National Forest Management Act of 1976 ("NFMA") to reform Forest Service management of national forest system lands. 16 U.S.C. § 1600 *et seq.* The NFMA requires that the Forest Service implement a Land and Resource Management Plan ("LRMP") for each national forest. The forest planning process must comply with the National Environmental Policy Act ("NEPA") which requires the preparation of an environmental impact statement with public review and input. 42 U.S.C. § 4231 *et seq.* The LRMP must include land allocations, desired conditions, objectives, and standards and guidelines with which site-specific projects must comply. In addition, among NFMA's substantive requirements is the duty to provide for the diversity of plant and animal communities. 16 U.S.C. § 1604(g)(3)(B). In 1982, the Forest Service adopted implementing regulations for the NFMA, including a provision that "[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired nonnative vertebrate species in the planning area." 36 C.F.R. § 219.19(a)(1) & (6)(1982). To facilitate this provision, the Forest Service is required to select, monitor, and maintain habitat for management indicator species.

Both NEPA and NFMA make small steps towards offering protection for sensitive species, but neither law provides the strong, definitive conservation measures of either the federal ESA or CESA, and as such neither is adequate to conserve the highly imperiled Pacific fisher. The NEPA requires federal agencies, including the Forest Service and the Bureau of Land Management, to consider the effects of their

actions on the environment, including sensitive species. However, it does not prohibit them from choosing alternatives that will negatively affect individual fishers. The NFMA regulations require species viability, but do not prohibit the Forest Service from carrying out actions that harm species or their habitat, stating only that "where appropriate, measures to mitigate adverse effects shall be prescribed." 36 C.F.R. § 219.19(a)(1). By contrast, CESA § 2053 states "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy." Moreover, the CESA prohibits any person from taking or attempting to take (i.e., hunt, pursue, catch, capture, or kill) species listed as endangered or threatened, or any such species that is a candidate for listing under CESA. The provisions of CESA provide much stronger protection for the fisher than under NEPA and NFMA alone.

Within the past few years, the Forest Service under the Bush Administration began to weaken the NFMA planning regulations and to exclude the public from the forest planning process. In 2005, the Forest Service published a rule stating that the 1982 planning regulations were no longer in effect and determined that the forest planning process would not require NEPA analysis or an environmental impact statement. The agency also determined that its 2005 rule did not require consultation with the U.S. Fish and Wildlife Service to assess impacts of the new planning regulations on threatened and endangered species. Importantly for fishers and other wildlife, the 2005 rule also eliminated the specific species viability and diversity requirements, and required forest management plans to provide only for a diversity of ecosystems. 36 C.F.R. § 219.10(b) (2005). In March 2007, a federal court in the northern district of California enjoined the Forest Service from implementing the 2005 rule; in August 2007, the Forest Service again released a proposed rule that is virtually identical to the currently enjoined 2005 rule, eliminating the species viability requirement. Fed. Reg. Vol. 72, No 163, Thursday August 23, 2007 at p. 48515. In the most recent proposed rule, the Forest Service claimed that ensuring species viability is "not always possible" for the following reasons: (1) distribution patterns or population declines are sometimes due to factors outside the agency's control; (2) the number of vertebrate species present is "very large;" and (3) focus on the viability requirement has "often diverted attention and resources away from an ecosystem approach to land management that, in the Agency's view, is the most efficient and effective way to manage for the broadest range of species with the limited resources available for the task." *Id.* at p. 48522. The Forest Service provides no examples of when and how the viability requirement has diverted attention from an ecosystem approach, nor does it provide any examples of the agency being blamed for any species declines not resulting from management activities on national forests. While it may be inconvenient for the Forest Service that national forests support a large number of vertebrate species, this is not a legitimate reason for removing the requirement to monitor them when implementing projects that may cause potential harm. Simply put, the Forest Service has not focused sufficient attention on monitoring the effects of their management activities on vertebrate populations on national forests, and it is clear from recent actions that the agency has no intention of attempting to change their modus operandi. The effort to eliminate the species viability and diversity requirements is a case in point as to the Forest Service's lack of commitment to adhere to its own long-standing regulations to protect fishers and other sensitive species of plants and animals from potentially harmful management activities.

To make matters worse, the Forest Service is now chipping away at many of the other protections for the fisher provided by the NFMA and existing planning regulations. First, the agency is proposing to eliminate the fisher as a management indicator species on six national forests in California. Second, the standards and guidelines protecting fishers in the 2001 Sierra Nevada Forest Plan Amendment were drastically weakened in a 2004 overhaul of the Amendment. One reason given for the 2004 SNFPA overhaul is that the fisher is already protected by furbearer networks, or 'Habitat Management Areas,' yet most LRMPs do not provide specific protective measures within HMAs. Third, the Forest Service recently eliminated the 'Survey and Manage' program under the Northwest Forest Plan that indirectly provided some habitat protection for the fisher in northern California. Finally, the Giant Sequoia Monument management plan – which was recently declared illegal in court – failed to provide basic protections for much of the remaining occupied fisher habitat in the southern Sierra Nevada, where the species is clinging to existence. Below, we discuss each of these issues in turn.

Management Indicator Species Amendment

An important tool for measuring impacts of the Forest Service's management projects on wildlife is the designation, monitoring, and maintenance of habitat for "management indicator species" (MIS). As part of each national forest's Land and Resource Management Plan developed under the 1982 implementing regulations for NFMA, the Forest Service is required to monitor habitat and population trends of MIS, as well as to maintain and improve their habitats. The species are selected because changes in their populations indicate the effects of management activities on a host of other species dependent upon similar habitat types – in other words, MIS are monitored as proxies for the broader array of species inhabiting similar habitats. Both the 2001 and revised 2004 Frameworks required that the Forest Service monitor effects of projects on long-term viability of MIS, and to maintain and improve the habitats they depend upon for survival. Monitoring is absolutely critical to determining whether fisher populations are responding positively or negatively to management activities on national forest system lands.

In the Sierra Nevada, the Pacific fisher is currently a designated MIS on the Inyo, Lassen, Sierra, Stanislaus, and Tahoe national forests. On the Inyo, the fisher is a MIS for habitat; on the Lassen and Sierra, it is a MIS for both habitat and population trends, and on the Stanislaus and Tahoe, it is a MIS for population trends. Of these national forests, the Pacific fisher currently occupies only the Sierra National Forest, but the other national forests are part of the species' former range and are critical for its recovery. In northern California, the fisher was listed as a MIS on the Klamath National Forest. In the past few years, the Forest Service has proposed removing the Pacific fisher and many other species from the list of MIS to reduce the agency's monitoring requirements. In September 2004, the Klamath National Forest issued an Environmental Analysis ("EA") proposing to amend its forest plan to eliminate the Pacific fisher and other species as MIS, reducing the list of 32 MIS to just four species, including three tree species and only one animal species (the northern spotted owl). Although the EA (at p. 10) notes that the Pacific fisher was originally designated as a MIS because "the fisher is a good indicator of habitat quality because it is habitat specific, especially in its denning and resting needs," the EA then fails to offer any discussion or analysis as to why the fisher was eliminated from the MIS list. The Klamath National Forest's amendment process is currently on hold.

Similarly, in February 2007, the Forest Service released a draft Environmental Impact Statement proposing to slash the list of MIS on all national forests in the Sierra Nevada. The proposed action would eliminate the Pacific fisher as a MIS on the Inyo, Lassen, Sierra, Stanislaus, and Tahoe national forests because, due to the species' "limited distribution in the Sierra Nevada, population trend data are unlikely to provide useful information to inform forest service management at the Sierra Nevada scale." DEIS at p. 94; Appendix B. However, the distribution of the fisher is limited only because it has been extirpated by human activities from the northern and central Sierra Nevada. It should be presumed that the limited distribution is a temporary state and that the recovery of the fisher would include expansion of the population back into its historic range. Monitoring of habitat conditions and assessing impacts of site-specific projects on potential fisher habitat throughout the entire historic range is critical to ensure that there is sufficient suitable habitat to allow for fishers to recolonize the central and northern Sierra – particularly if reintroduction efforts are to proceed and succeed. That said, the Forest Service eliminated the fisher as a MIS even on the Sierra National Forest where the species is still present. The proposed action would eliminate any legal requirement for the Forest Service to conduct ongoing monitoring of fisher habitat and populations as part of forest plan implementation to determine impacts of projects on currently occupied habitat and potential habitat for recolonization and recovery.

The DEIS proposes to designate three species as MIS for late-successional forests: the California spotted owl, the northern flying squirrel (*Glaucomys saubrina*), and the American marten. While there is some overlap in habitat use among these species, the fisher occurs in lower-elevation forests than the flying squirrel and American marten, putting the fisher into "closer proximity to human activities than the congeneric marten," (Zielinski et al. 2004a at p. 1402). The Sierra Nevada Forest Plan Accomplishment Monitoring Report for 2005 reports that "fishers were consistently detected at lower elevations than martens. Fishers were detected as low as 3,110 feet and as high as 9,000 feet; martens detections ranged from 4,400 feet to 9,793 feet." Thus, a large portion of lower-elevation habitat for fishers is not represented by maintaining habitat for marten. Moreover, while the California spotted owl also shares many habitat associations as the Pacific fisher, the owl is less impacted by barriers such as large roads. Campbell (2004) found that low density of roads is a significant variable differentiating areas occupied and

unoccupied by fishers. Thus, the impacts of some projects likely might differ between the two species, and maintenance of fisher habitat may include different considerations than spotted owl habitat. In sum, retaining the fisher as a MIS is the best means to ensure continued monitoring and reporting of population status and habitat conditions for this habitat specialist.

The DEIS also expresses the Forest Service's desire to create a uniform list of MIS applicable across the Sierra Nevada. While there is value to including as MIS some species that currently occur throughout the entire mountain range, there is also value to including species that are important indicators of the health of sensitive habitats within some, but not all, of the national forests. The mountain range is not uniform from north to south, and thus there is no legitimate reason why the MIS list should be uniform.

The Forest Service's DEIS attempts to reassure the public that the fisher would not be impacted by its removal from the MIS list, stating (at p. 33) "for those at-risk species with existing monitoring programs, such as the California spotted owl and Pacific fisher, those monitoring programs will remain in place even if those species are no longer designated as MIS. For Forest Service Sensitive Species, monitoring,,analysis, and management will continue according to Forest Service policy (see FSM 2670.22, 2672.1) so long as those policies remain in effect." However, without MIS designation there is no legal requirement or guarantee that fisher monitoring programs will continue in the future on national forests. Forest Service policy as outlined in the Forest Service Manual does not supplant the definitive requirements to monitor MIS because the manual's policy is broad and undefined. The Forest Service Manual at 2672.1 simply states "[s]ensitive species of native plant and animal species must receive special management emphasis to ensure their viability and to preclude trends toward endangerment that would result in the need for Federal listing," and "there must be no impacts to sensitive species without an analysis of the significance of adverse effects on the populations, its habitat, and on the viability of the species as a whole. It is essential to establish population viability objectives when making decisions that would significantly reduce sensitive species numbers." The Forest Service Manual does not require a specific monitoring program for species other than MIS. Thus, the continuation of existing monitoring programs is by no means assured in the future, whereas retaining the fisher as a MIS would legally require the Forest Service to continue monitoring population status and habitat conditions. In other words, the MIS is an important means whereby a specific program of habitat maintenance and population monitoring and regular reporting to the public occurs as part of forest plan implementation.

The importance of existing MIS has been established by recent court decisions.[2] The Chief of the Forest Service also emphasized the importance of MIS, stating in the 2004 appeal decision for the Framework that "managing habitat to maintain viable populations of the California spotted owl, the Pacific fisher, and American marten can only be assured by using subsequent site-specific evaluations and the adaptive management and monitoring strategy." The Forest Service's proposal to eliminate the fisher as a MIS removes an additional layer of protection for the species that, combined with the weakening of the 2001 SNFPA, the inadequate management plan for the Giant Sequoia National Monument, the lack of protective measures for habitat management areas, and the weakening of the Northwest Forest Plan, leads the Pacific fisher further down the road to extinction in California.

b. Sierra Nevada

Because of isolation, small population size, and continued habitat loss due to both anthropogenic and stochastic factors, the fisher population in the southern Sierra is at risk of extinction (Lamberson et al. 2000, Truex et al. 1998). Lamberson et al. (2000), for example, concluded:

> "Theoretical implications of the effects of stochastic phenomenon on small populations suggest that unless fishers in the southern Sierra can maintain high vital rates (reproduction and survival), the population may face imminent extinction... Furthermore, the southern Sierra population has very low genetic diversity and this impoverishment may put it at additional risk. Without a source of immigrants from the north, the population in the southern Sierra cannot be 'rescued' or genetically enriched by new animals from other populations."

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[2] *Earth Island Institute v. U.S. Forest Service*, 442 F.3d 1147 (9th Cir. 2006); *Sierra Nevada Forest Protection Campaign v. Tippen*, 2006 WL 2583036 (E.D. Cal. 2006); *Sierra Club v. Eubanks*, 335 F. Supp. 2d 1070 (E.D. Cal. 2004).

In light of this information, it is clear that any management plan for the Sierra Nevada must do two things to ensure the long-term survival of the fisher in the Sierra Nevada—maintain and enhance existing fisher habitat and facilitate the recolonization of fishers into the central and northern Sierra, ultimately re-connecting the two remnant California populations. Indeed, Truex et al. (1998) concluded:

> "Long-term management of fisher habitat in California should aim to restore and recruit large structural elements necessary for resting and denning while maintaining stands with high canopy closure... Recolonization of the central and northern Sierra Nevada may be the only way to prevent fisher extinction in the isolated southern Sierra Nevada population."

A substantial obstacle that must be addressed before fishers in the southern Sierra can be reconnected with fishers in northern California is the existence of habitat bottlenecks in portions of the northern and central Sierra Nevada. In particular, portions of the Eldorado, Tahoe, and Plumas National Forests are characterized by checkerboard ownership, which has led to habitat fragmentation, and areas west of Yosemite National Park in the Stanislaus and Sierra National Forests have been negatively impacted by the combined effects of large fires and logging. For example, the Forest Service concluded that "the central Sierra Nevada is the most fragmented [region in the Sierra] with a high number of highway crossings and several areas burned by large, severe wildfires, sometimes occurring across multiple ownerships," adding that "in the central and northern Sierra Nevada, patterns of fragmentation and connectivity depend on management of private lands," (USDA 2000). Addressing these bottlenecks should be a priority in any management plan for the Sierra Nevada.

To date, the Forest Service has failed to enact comprehensive and effective measures to protect the fisher and its habitat in the Sierra Nevada. Instead, current regulations consist of inadequate standards in the revised Sierra Nevada Forest Plan Amendment, vague direction to provide consideration for fishers at the project level in individual forest plans, and a network of "habitat management areas" that lack effective guidelines to provide real protection for the fisher and its habitat.

Habitat Management Areas

Based on an extensive review of the literature and communications with furbearer biologists and at the request of the Regional Forester for California's national forests, Freel (1991) recommended establishment of fisher habitat management areas (HMAs). HMAs were to be large enough to support a fisher reproductive unit with one male home range and two adjacent female ones and to be connected to other HMAs via corridors of suitable habitat. In response to this report and concern over the status of the fisher and other furbearers, several Sierra Nevada national forests designed and established HMAs (Questionnaire from Lynn Sprague, Regional Forester, Pacific Southwest Regional Office USDA Forest Service to National Forests of the Sierra Nevada 1998). The Sierra Nevada Forest Plan Amendment Final Supplemental EIS (Section 3.2.2.1) stated that "many forests have identified and manage for a habitat network and linking corridors for forest carnivores. These areas and their management vary by forest depending on habitat availability, detections, and other factors. Some of these networks have been established by forest plan amendment." However, the HMA strategy is similar to the SOHA strategy developed for the spotted owl and thus has many of the same problems (see Thomas et al. 1990). Namely, isolated "pairs" of fishers surrounded by unsuitable habitat are unlikely to persist because as individual pairs are lost due to deterministic factors or demographic or environmental stochasticity, there is little chance that habitat will be recolonized, eventually leading to collapse of the entire population. Indeed, Bombay and Lipton (1994) in a review of the effectiveness of the Eldorado National Forest's fisher HMA network conclude:

> "Despite this analysis, it is not at all clear that a network of single-pair habitat areas, connected by riparian corridors, is a desirable way to manage habitat for fisher populations. Literature on minimum viable populations would seem to indicate otherwise."

Even if the HMA strategy were effective, however, the Forest Service has not consistently implemented it and has failed to enact effective measures to protect habitat within the HMAs. Only five of the Sierra Nevada national forests developed a network and only three of these have incorporated standards and guidelines for their HMAs into their forest plans. In general, these guidelines provide little direction for management of the HMAs and allow continued logging. Only the Lassen's plan restricts existing uses by only allowing salvage logging, which still can potentially degrade fisher habitat (USDA Lassen National

Forest 1993). However, the majority of the Lassen's HMAs were placed in existing wilderness, meaning this guideline only applies to a small portion of the Lassen's timber base. Both the Sierra and Stanislaus allow continued logging in the HMAs with few specific restrictions to protect fisher habitat beyond vague statements like "maintain sufficient habitat" and some minimal requirements to retain some snags and logs. For example, management plans for two of the seven HMAs on the Sierra National Forest fail to contain guidelines strictly prohibiting logging that reduces canopy closure, stand size, or other stand attributes below levels required by the fisher (Styger 1995, Sorini-Wilson 1997).

Considering that most forests acknowledged that they had difficulty finding sufficient high-quality habitat to create the HMAs and had to include poor quality habitat, this lack of regulation ensuring adequate protection in HMAs is particularly egregious. For example, the Lassen acknowledges that 33 percent of their HMAs consists of unsuitable habitat. Similarly, the Sierra National Forest management plan for the Browns Meadow HMA acknowledges that half of this HMA has road densities of 6 miles/mile^2, and half has road densities of 3 miles/mile^2, but fails to recommend that any roads be obliterated (Styger 1995) despite the fact that low-capability fisher habitat should have road densities no more than 3 miles/mile^2 and that high capability habitat should have road densities no more than ½ miles/mile^2 (Freel 1991).

Table 18. Status of fisher habitat management areas in Sierra Nevada National Forests.

National forest	Developed fisher HMA network	Incorporated into Forest Plan	HMA management guidelines from the Forest Plan
Sequoia	No	N/A	N/A
Sierra	Yes	Yes	Continue existing uses when they do not preclude usage by the species. Permit limited yield logging utilizing salvage, sanitation and individual and group selection methods with some retention of snags and logs. Management plans developed for two of seven HMAs.
Stanislaus	Yes	Yes	Develop management plans. Permit low yield, uneven age logging with guidelines to retain some snags and logs.
Eldorado	Yes	No	Suggested guidelines never adopted.
Tahoe	Yes	No	N/A
Plumas	No	N/A	N/A
Lassen	Yes (HMAs tentatively identified)	Yes	Only allow salvage logging.

Beyond the HMAs, a few of the Sierra Nevada national forests have guidelines pertaining to the fisher in their Land and Resources Management Plans, including the Sierra, Inyo, and Tahoe National Forests. These guidelines are for the most part vague and ineffectual. For example, the Tahoe National Forest Land and Resource Management Plan (USDA Tahoe National Forest 1990) states "develop and implement silvicultural practices to maintain or improve furbearer habitats." To date, there have been no amendments to the Tahoe plan incorporating any such practices, thus the Tahoe's plan contains no specific guidelines to protect fisher habitat. The Sierra National Forest's Land and Resource Management Plan is the only forest with a firm guideline to protect the fisher, requiring protection of a 120-acre area around denning sites if in closed forest and a 500-acre area if in open forest. However, this requirement falls far short of protecting enough suitable habitat to support a viable, reproducing fisher population. Many of the national forests in the Sierra Nevada are now revising their forest management plans, and whether protective measures for fisher under these plans will be adequate remains to be seen. However, if recent trends towards weakening standards and guidelines for fisher conservation by the Forest Service are any

indication, it is likely that these revised forest plans will continue to allow loss and fragmentation of habitat. Perhaps the most egregious example of the Forest Service's efforts to weaken protections for the fisher and its habitat is the 2004 overhaul of the 2001 Sierra Nevada Forest Plan Amendment.

Sierra Nevada Forest Plan Amendment

In the early 1990s, concerns about the conservation status of the California spotted owl – a species that shares many habitat associations with the Pacific fisher – and the inadequacy of existing regulatory mechanisms to protect the owl instigated a technical review of the owl's status and recommendations for management (Verner et al. 1992). This report suggested interim guidelines for conservation of spotted owls in the Sierra Nevada, conditioned upon additional research to refine and improve protective measures. In 1993, the Forest Service issued a decision which amended the forest plans in the Sierra Nevada to incorporate the interim guidelines, and circulated a draft EIS for an updated California spotted owl management plan. Soon after, the Sierra Nevada Ecosystem Project ("SNEP Report:" Centers for Water and Wildland Resources 1996) was submitted to Congress in 1996. This report contained a wealth of information about historical and current forest conditions and threats to the natural resources of the Sierra Nevada ecosystem. A federal advisory committee was convened to review the draft EIS for spotted owl management that took into account the SNEP report. This advisory committee determined that the draft EIS was inadequate, and recommended that the scope of the EIS be expanded to include management guidelines for a host of other issues beyond the spotted owl, including riparian ecosystems, old-growth forests, and other species such as the Pacific fisher. In 1998, the Forest Service initiated a process that culminated in the 2001 Sierra Nevada Forest Plan Amendment (SNFPA) Record of Decision and FEIS, also known as the "Framework."

The Framework was designed to "significantly improve the conservation strategy for California spotted owls and all forest resources." The multi-year process included dozens of public meetings and involved many scientists both inside and outside the Forest Service. Some of the provisions of the Framework designed to protect and manage old forests and associated wildlife species such as fishers included:

(1) the protection of a 'Southern Sierra Fisher Conservation Area' within which 60 percent of each watershed was to have dense (>60 percent) canopy cover;

(2) the designation of 4.25 million acres of Old Forest Emphasis Areas (OFEAs) and the promotion of old-growth conditions in OFEAs by restricting harvest of trees above 12 inches DBH and not reducing forest canopy by more than 10 percent;

(3) the protection of all old growth stands 1 acre or larger by managing them as OFEAs; and

(4) the implementation of standards and guidelines limiting removal of medium and large trees (>20 inches DBH), canopy cover (>50 percent), large snags, and down logs throughout general forest areas.

In sum, the original Framework provided some minimum protection for fishers by retaining medium and large diameter trees in OFEAs and smaller old growth stands, by maintaining canopy cover at a minimum of 50 percent and limiting reductions in canopy cover to 10-20 percent in general forests, and by establishing a Southern Sierra Fisher Conservation Area to protect currently occupied habitat, within which the majority of each watershed would be managed for dense canopy cover.

Almost immediately following the adoption of the 2001 SNFPA Record of Decision, the newly installed Bush Administration pushed to weaken its conservation measures to allow more logging, under the guise of "increasing flexibility and efficiency in fuels management as well as providing more economically feasible approaches of implementing the fuels reduction provisions of the decision," (Sierra Nevada Plan Amendment Review Team Meeting with Owl Scientists, June 27-28, 2002). At the direction of the Chief of the Forest Service, the Regional Forester and the Sierra Nevada Forest Plan Amendment Review Team circulated a revised Supplemental EIS (SEIS) that significantly increased logging throughout the Sierra Nevada. The revised SNFPA Record of Decision was signed on January, 2004. The SEIS significantly weakened regulations protecting fishers in the Sierra Nevada in the following ways:

Limited Operating Period – The original Framework had required a limited operating period for all projects in a 700-acre buffer around fisher den sites during the breeding period. The 2004 SEIS eliminated this limited operating period for projects other than vegetation treatments, even though road-

building, recreation, and other human activities can adversely impact fishers. No information was provided in the SEIS or Biological Assessment justifying this change in limited operating period.

Southern Sierra Fisher Conservation Area – The Southern Sierra Fisher Conservation Area was established to protect the remaining occupied fisher habitat in the mountain range. The 2001 FEIS (ROD at p. 8) described the desired future condition for the Southern Sierra Fisher Conservation Area as within each watershed, a minimum of 50 percent of the mature forested area is habitat of at least travel or foraging quality (presumed to have at least 40 percent canopy closure) and at least an additional 20 percent of the mature forested area is habitat of resting or denning quality (presumed to have at least 60 percent canopy closure). In addition, the desired future condition for forest carnivore den sites (ROD at p. 10) should include at least two large conifers (>40 inches DBH) per acre and one or more large oaks (>20 inch DBH) per acre with suitable denning cavities and >80 percent canopy closure. The 2001 Framework guideline for the Southern Sierra Fisher Conservation Area directed that more than 60 percent of each watershed in the area (outside the WUI zone) be dominated by trees >24 inches DBH and >60 percent canopy cover. Together, the desired condition and guidelines would have conserved and restored a majority of dense habitat required by the fisher within each watershed in the Conservation Area. However, the guideline was eliminated in the 2004 SEIS, because, according to an "informal analysis" conducted internally by the Forest Service, "the average value for the forested proportion of a sub watershed within the SSFCA with dense habitat is 37%," and therefore it was "difficult to determine a single threshold to guide landscape level management across the diverse habitats that comprise the species [*sic*] range." SEIS at section 3.2.2.1. In other words, because most of the watersheds failed to support enough suitable habitat, and because an informal, non-published, internal Forest Service analysis found that some watersheds occupied by fishers had less than 60 percent of the watershed with suitable dense habitat, the Forest Service eliminated the guideline for watersheds to support at least 60 percent suitable habitat – one of the only guidelines in the original Framework to offer relatively strong protection for currently occupied landscapes. Contrary to published scientific studies (e.g., Zielinski et al. 2004a), the SEIS provided no detailed, useful information about the subwatersheds, such as whether subwatersheds with lower amounts of suitable habitat were occupied by a male or a female fisher and what age class, whether females were breeding in these subwatersheds, whether animals in lower-quality subwatersheds were forced to have larger home ranges to encompass more suitable habitat, whether reproductive success was lower in subwatersheds with less suitable habitat compared to those with higher amounts of suitable habitat, and other information necessary to justify deviating from recommendations established using available scientific data painstakingly gathered over many years by qualified fisher scientists. In fact, data from the Sequoia National Forest indicate that in watersheds containing fisher den sites, 83 percent of the 700-acre buffers around fisher dens and 61 percent of the sub watersheds containing these dens have >60 percent canopy cover. In his expert declaration for an appeal of the SEIS, fisher scientist Dr. Reginald Barrett stated:

> "The FSEIS justifies the weakening of the SSFCA standard by referring to unpublished data and analysis that allegedly indicate 'that the majority of sub watersheds ... do not have 50% of the forested area of the watershed in 60% canopy closure.' (FSEIS, p. 139). However, this explanation is not persuasive. The SSFCA was explicitly based on published research of fisher home ranges in the southern Sierra Nevada. Even assuming that many watersheds in the southern Sierra do not currently meet the standard does not justify the Forest Service's failure to manage for complying with the standard. Given that the fisher's status is indisputably imperiled, weakening an existing standard and aiming for a 'desired condition' that falls short of the guidelines suggested by the best available research is unjustified."

The SEIS (pp.247-248) predicts approximately 145,000 acres, or 31 percent of the Southern Sierra Fisher Conservation Area containing >50 percent canopy cover would be logged. The 2004 SEIS's elimination of the requirement to retain high-quality fisher habitat within the majority of each watershed throughout the one remaining region of the Sierra Nevada that is still occupied by fishers is entirely unjustified and clearly puts the species at additional risk of extinction.

OFEAs, Small Old-growth Stands, and Medium and Large Trees – In addition to weakening protection for fisher habitat at the watershed scale within the southern Sierra fisher conservation area, the 2004 SEIS eliminated retention standards for structural elements such as large trees and snags and downed wood in all land allocations throughout the Sierra Nevada, allowing significant degradation of fisher denning, resting, and foraging habitat (as well as degradation of habitat for spotted owls, American

martens, northern goshawks, and other old-forest dependent speeies). The OFEAs were designed in part to provide habitat for fishers and other old-forest dependent species and to promote habitat connectivity and dispersal. The size of the OFEAs was based on the capability to support 14 female and 7 male fishers, and the spacing between them was designed to be within the fisher's dispersal distance. With respect to large trees, the original Framework included a harvest diameter limit of 12 inches within OFEAs and 20 inches in general forest and threat zones, which cover the vast majority of the fisher's currently occupied habitat in the southern Sierra Nevada and potential habitat for recolonization in the northern and central Sierra Nevada. The 2004 SEIS replaced these standards with a harvest diameter limit of 30 inches applicable in all land allocations. In effect, the plan would allow removal of many if not all medium-large (12 to 30 inch) trees in logged areas in currently occupied and future fisher habitat. The 2004 SEIS also allows canopy cover to be reduced by as much as 30 percent, to a minimum of 40 percent and even lower in some instances. These changes are not in accord with all the research documenting Pacific fisher habitat requirements. According to Dr. Barrett, "these medium and large trees, in combination with larger trees and snags and dense canopy closure, comprise an important element of high quality fisher habitat, and their removal could significantly degrade existing and potential fisher habitat." Dr. Barrett further noted:

> "Not only are large trees important, but new research demonstrates that medium-large trees (12-24" dbh) are also an important element of fisher habitat, particularly in the southern Sierra. At the home range scale, forests dominated by medium-large trees (12-24" dbh) "composed the greatest proportion of home ranges" in the Sierra study area. (Zielinski et al. [2004b], p. 23). At the rest site scale, the same authors found that 12-24" dbh trees constitute the most frequent size classes surrounding fisher rest sites. (Zielinski et al. [2004a])."

The 2004 SEIS eliminated meaningful protection of OFEAs and smaller old-growth stands by allowing harvest of large trees up to 30 inches DBH and managing them similar to general forest. In the southern Sierra, these old-forest areas provide crucial habitat for fisher denning, resting, and foraging, and in the central and northern Sierra, protection of fisher habitat attributes in OFEAs and smaller old-growth stands would allow for future recolonization and recovery of the species to a larger portion of its former range. The weakening of habitat protections under the SEIS significantly reduces the likelihood of fisher survival and recovery in the Sierra Nevada.

The revisions to the original Framework were ostensibly implemented to increase flexibility in fuels management – and indeed, the SEIS claims (at p. 250) that "the largest events affecting viability of fisher populations in the southern Sierra appear to be large stand replacing wildfires." However, as noted by Dr. Barrett in his appeal declaration, "whereas the future risk of wildfire is conjectural, the likelihood that proposed logging will degrade fisher habitat in the short term is far greater." Moreover, Dr. Barrett stated, "the Forest Service has failed adequately to explain why removing medium-large trees and significantly reducing canopy cover is necessary to reduce the risk of stand replacing wildfire or to acknowledge the extent to which such logging is likely to degrade fisher habitat." In other words, not only is the threat to fishers from fire unknown, but the SEIS' solution to the unknown threat unnecessarily degrades currently suitable habitat because harvesting medium and large trees is ineffective anyway in reducing severe fire. In essence, the SEIS proposes to destroy fisher habitat in order to save it. Section 3.2.2.1. of the SEIS asserts that although two studies (Zielinski et al. 2004a and Self and Kerns 2001) found that stands in the intermediate size class of trees were selected by fishers, "the trees actually used were among the largest available." This research was cited as a justification for logging the medium and larger-sized trees up to 30 inches DBH, with the Forest Service implying that trees less than 30 inches DBH are not important elements of fisher habitat because they are not selected for actual denning and resting sites. In fact, Zielinski et al. (2004a at p. 488) specifically stated that "resting fishers place a premium on continuous overhead cover...but prefer resting locations that also have a diversity of sizes and types of structural elements." The habitat surrounding denning and resting sites is also an important component of resource selection by fishers. In general, the results of numerous research studies documented that fishers require many large trees, snags, and logs of both conifers and hardwoods distributed within their home ranges, continuous high canopy cover, and structural diversity (i.e. variation in tree size). These habitat elements would be eliminated under modified prescriptions in the SEIS, and there is simply no scientific justification to support the SEIS' modified prescriptions either from a fisher habitat or fire-risk reduction perspective. Zielinski et al. (2004a) stated (at p. 489) "if the response [by management to the threat of

severe fire] includes significant reduction in canopy or density of vegetation, it could affect the habitat value for fishers." This is exactly the response in the 2004 SEIS.

In an effort to understand the potential impacts to fishers of logging prescriptions allowed under current regulations, Truex and Zielinski (2005) modeled fisher habitat before and after fuel treatments within the ongoing Fire and Fire Surrogate study being conducted at Blodgett Forest Research Station and Sequoia-Kings Canyon National Park. Blodgett Forest Research Station is located in the Eldorado National Forest in the central Sierra Nevada, where the fisher has been extirpated, while Sequoia-Kings Canyon National Park in the southern Sierra Nevada is currently occupied by the species. At Blodgett, treatments included mechanical logging, mechanical and prescribed fire, prescribed fire alone, and no treatment, whereas at Sequoia-Kings Canyon treatments included only spring burn, fall burn, and no burn. The authors assessed change in predicted probability of use (as an index of habitat quality) for fishers using resource selection functions reported in Zielinski et al. (2004a). At Blodgett, any treatment involving logging significantly reduced suitability of fisher resting habitat and canopy closure, while the fire-alone treatment was similar to no treatment. At Sequoia-Kings Canyon, the late-season burn treatment had significant impacts on fisher habitat suitability as well as canopy closure. The study areas used in their research already had relatively low predicted habitat value for fishers prior to treatment, thus the authors noted (at p. 15) "although the decrease in predicted resting and foraging habitat value attributed to the treatments was small, relatively modest reductions in habitat value at sites that are already of relatively low predicted value may have disproportionately greater impact on habitat recovery." Moreover, the fire-only treatment had essentially no negative impacts on fisher habitat conditions at Blodgett, although late-season burns did reduce probability of use at Sequoia-Kings Canyon. The conclusion was that habitat manipulations such as those allowed in the revised SNFPA would "result in short-term reductions in habitat quality," although the authors also assumed that the relative impacts of vegetation management projects are "considerably less than large-scale catastrophic fires." Again, however, impacts from catastrophic fires are speculative while impacts from logging are known.

Recolonization of fishers into portions of their range from which they have been extirpated is critical to the long-term viability of the species (Truex et al. 1998). The 2004 SEIS would allow substantial additional degradation of fisher habitat in the northern and central Sierra Nevada. In particular, the SEIS allows full implementation of the Quincy Library Group pilot project, which significantly increases logging in the northern Sierra Nevada above and beyond that allowed even under the SEIS' revised standards and guidelines. Impacts include not only logging but significant road building, further fragmenting the landscape. The U.S. Fish and Wildlife Service has stated that the QLG pilot project "will disproportionately affect suitable habitat for [the fisher]" and "the Service is concerned that the proposed project will preclude recovery of this species within the project area and throughout the Sierra Nevada."[3] The U.S. Fish and Wildlife Service also has stated that "retaining suitable habitat within and outside of the Southern Sierra Fisher Conservation Area is necessary to maintain linkage between the southern Sierra Nevada population and the population in northwest California."[4] The impact of the 2004 SEIS will be to reduce the likelihood of the fisher's recolonization of the central and northern Sierra Nevada, thus precluding any hope for the fisher's recovery in California.

Finally, the 2004 SEIS significantly weakened protection for eastside forests in the Sierra Nevada. The fisher inhabits eastside pine habitat within the southern Sierra fisher conservation area, and historically inhabited eastside forest types in the central and northern Sierra Nevada as well (Grinnell et al. 1937). The SEIS eliminated any retention standards for canopy cover in eastside forests and raising the maximum diameter limit of trees to be harvested from 24 inches to 30 inches. The U.S. Fish and Wildlife Service recognized that maps of fisher observations from 1961 to 1982 and from 1983 to 1993 showed fisher locations in eastside forests.[1] The SEIS itself admitted that there are no guidelines to protect fisher habitat in eastside forests. This egregious omission of any protection whatsoever in eastside forests is yet another failure of existing regulatory mechanisms to ensure the conservation of the fisher.

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[3] USDI Fish and Wildlife Service. 1999. Comments, review and informal consultation on the draft environmental impact statement for the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. August 17, 1999. Pages 11 and 12.

[4] USDI Fish and Wildlife Service. 2001. Formal endangered species consultation and conference on the biological assessment for the Sierra Nevada Forest Plan Amendment final environmental impact statement. January 11, 2001. Page 134.

In sum, leading fisher scientists and available scientific data indicate that the revised 2004 Sierra Nevada Forest Plan Amendment is grossly inadequate to protect occupied and potential fisher habitat from additional degradation from logging, and thus fails to prevent further population declines – potentially leading to the extinction of the species in the Sierra Nevada. Yet even the inadequate provisions for fisher in the SNFPA are not immune to further weakening by the Forest Service. One example is the Kings River Project, an administrative study, described above, which is exempted from the SNFPA standards. Another example of the Forest Service's pattern of weakening protections for fisher on public lands is a recent management plan for the Giant Sequoia National Monument.

Giant Sequoia National Monument Management Plan

By executive proclamation 7295 on April 15, 2000, President Clinton established the Giant Sequoia National Monument, encompassing 327,769 acres. The Monument restricted construction of new roads and timber production, allowing removal of trees for personal use only and in cases where it is clearly needed for ecological restoration and maintenance or public safety. Timber sales already under contract or with Decision Notices signed in 1999 were able to go forward. The restriction on logging as intended under the proclamation would have provided protection for the fisher within its boundaries, and for many individuals in the region, as 24 percent of detections from track plate surveys conducted from 1989-1994 (Zielinski et al. 1997a) occurred within the Monument boundary. The proclamation directed the Forest Service to prepare a management plan for the Monument. Unfortunately, the management plan adopted in January 2004, which amended the 1988 Sequoia National Forest Land and Resource Management Plan as amended by the 2001 Framework, allowed significant logging of fisher habitat under the guise of 'fire protection' and 'ecological restoration.' Moreover, the four timber sales already under contract would have impacted habitat for 23 of approximately 70-150 female fishers remaining in the southern Sierra Nevada. Together, the management plan and existing timber sales would have resulted in serious adverse impacts to this small, isolated, highly imperiled fisher population. Based largely on impacts to the fisher, and the fact that its conservation status was finally becoming widely recognized as extremely dire, two federal court decisions in the northern district of California prohibited logging to proceed in the four existing timber sales and under the 2004 Monument management plan.

The Forest Service's Record of Decision and Final Environmental Impact Statement for the Giant Sequoia National Monument were adopted in January, 2004. All administrative appeals of the plan were denied in January, 2005. The Final EIS predicted that approximately 63,840 acres would be treated in the Monument in the first decade of implementation of Modified Alternative 6. In all land allocations – including the newly created Fisher/Old Forest allocation which replaced the OFEA, General Forest, and Southern Sierra Fisher Conservation Area allocations, treatments could involve logging trees up to and including 30 inches DBH, under the guise of fire-risk reduction and reestablishing 'more natural' structural conditions. The standards and guidelines include maintaining 60 percent canopy closure over 50 percent of the watershed "based on local information regarding fisher habitat and the need to protect habitat, communities, and other valuable resources from the effects of severe wildfire." This standard was lower than the 2001 Framework standard to maintain 60 percent canopy closure over 60 percent of each watershed. The Monument plan's standards and guidelines also allow canopy cover in mature forest habitat to be reduced up to 30 percent within a treatment unit, and overall canopy can be reduced to as low as 40 percent. Furthermore, the Monument Plan "would emphasize retaining road access for public use and for management activities similar to current access levels, approximately 900 miles of roads." ROD at p. 10. Given the known negative impacts of roads on fishers, and the fact that vehicle collisions with fishers were described by one Forest Service biologist as relatively common in the region, this emphasis further threatened the viability of the fisher in the southern Sierra. Finally, the Monument plan's standards and guidelines allowed vegetation treatments even within the 700-acre buffer around known fisher den sites. The Monument was originally designated to protect the largest groves of redwoods outside Sequoia National Park from additional degradation, yet the management plan actually reduced protection for large trees and snags and canopy cover below that offered by the 2001 Framework which it amended.

Two recent federal court decisions regarding the Giant Sequoia Monument declared both the 2004 management plan and the existing timber sales illegal. In August 2006, the northern district declared the Monument plan was illegal for several reasons. The court determined that the Monument plan did not conform to the 2001 Framework and, in particular, the standards and guidelines that applied to the Fisher/Old Forest allocation in the Monument directly conflicted with those governing land allocations in

the 2001 Framework by allowing logging of trees up to 30 inches DBH. A second court decision ruled that the Forest Service failed to properly consider significant new information on the extremely endangered status of the Pacific fisher when it approved operating plans for the four timber sales within the Monument that would have severely degraded fisher habitat. The court decision cited the Ninth Circuit Court of Appeals, in that "the Forest Service appears to have been more interested in harvesting timber than in complying with our environmental laws."

These instances confirm the lack of adequate protection for fishers on national forest system lands under existing regulatory mechanisms in the Sierra Nevada.

c. Northern California

Populations of the Pacifie fisher in its California-southern Oregon range are isolated from the larger continental population and from each other. Recent genetic analysis indicates that gene flow historically occurred from British Columbia to the southern Sierra (Drew et al. 2003, Wisely et al. 2003) Such gene flow may be important to the long-term survival of the Pacific fisher in California and the west coast. Thus, protection measures for the fisher must be considered within the context of their ability to facilitate recolonization of fishers into enough of their historic range in Washington and Oregon to enable gene flow to occur across populations.

The Northwest Forest Plan

Protections for late-successional forests and associated species on both public and private lands in the Northwest Forest Plan were designed largely for the northern spotted owl, marbled murrelet (*Brachyramphus marmoratus*), and salmonids. Despite the fact that spotted owls, murrelets, salmonids, and fishers are all associated with late-successional forests and that the loss of such forests has been used as a proxy for loss of habitat, as was done with the owl (USDI 1990), the degree to which the habitat needs of the owl, marbled murrelet, and anadromous fish overlap with the habitat needs of the fisher is undetermined and there is likely some divergence. For example, because both the marbled murrelet and the spotted owl have the ability to fly over areas of unsuitable habitat, they may be less sensitive than the fisher to habitat fragmentation or dispersal barriers, such as major roads. As a result, reserve designs or protection measures designed around habitat needs for these avian species are unlikely to facilitate recovery of the fisher to a larger and more stable portion of their range. Indeed, Lewis and Stinson (1998) concluded:

> "the preservation and management of older stands for northern spotted owls, marbled murrelets and protection of structure in riparian areas for salmonids in Washington may provide areas of suitable habitat for fishers in the future. However, fishers require larger areas than spotted owls, and may require more extensive habitat conneetivity of closed-canopy stands."

Where fishers have been considered in management plans on private and public lands, it has generally been as an afterthought and specific measures to protect the fisher have generally not been enacted. The Northwest Forest Plan is no exception to this pattern.

On April 13, 1994, the Forest Service and Bureau of Land Management adopted the Northwest Forest Plan, which amended all planning documents to provide "management of habitat for late-successional and old-growth forest related species within the range of the northern spotted owl," including the fisher (USDA and USDI 1994). Unfortunately, the Plan failed to enact specific protections for the fisher, allowed continued habitat degradation, and does little to facilitate recovery of the fisher to a larger and more viable portion of its range. Furthermore, the Forest Service recently eliminated one of the few measures in the Plan that may indirectly benefit fisher – the 'Survey and Manage' provision. Also, the Bureau of Land Management is proposing to amend the Plan to eliminate late-successional reserves on 2.6 million acres in Oregon unless the reserves are needed to avoid jeopardy to threatened and endangered species (the fisher is only a candidate and thus does not receive this protection) and to declare timber production as the dominant use of those lands. This effort will further isolate the fisher and preclude recovery of the species into its historic range.

The Northwest Forest Plan had two primary objectives—to protect late-successional forests and associated species on Forest Service and Bureau of Land Management lands and to restart the federal timber program, which had been brought virtually to a halt by court orders (FEMAT 1993). To accomplish

these goals, the plan created a system of land designations, including late-successional and riparian reserves, where logging is mostly prohibited, and matrix lands and adaptive management areas, where logging is allowed with some restrictions (USDA and USDI 1994).

In the late-successional and riparian reserves, logging is restricted to thinning in stands younger than 80 years old and salvage in any stand larger than 10 acres, where there has been a stand-destroying disturbance, such as a blowdown, fire, or an insect outbreak. Approximately 30 percent of federal lands in the range of the northern spotted owl were placed in late-successional reserves and another 11 percent in riparian reserves. Riparian reserves are roughly 300 feet on both sides of fish bearing streams, 150 feet on both sides of perennial, non-fish bearing streams, and 100 feet on both sides of intermittent streams.

In matrix lands between reserves, logging is allowed in stands of all ages, including late-successional forests, but treatments must retain 15 percent of the green-tree volume, 240 linear feet of logs per acre greater than 20 inches diameter west of the Cascades, 120 linear feet of logs greater than 16 inches diameter east of the Cascades, and sufficient snags per acre to support cavity nesting birds at 40 percent of potential population levels (number per acre depends on forest type). The restriction to retain 15 percent of the green-tree volume, however, does not apply in the Mt. Baker-Snoqualmie National Forest, where site-specific restrictions were to be developed, or the Oregon Coast Range and Olympic Peninsula, where protections for the marbled murrelet were believed adequate. Logging of mature or late-successional forests is prohibited in 100 acre areas around known spotted owl activity centers (drawn to include the best available habitat) and within 0.5 miles of any site occupied by marbled murrelets. In addition, logging of late-successional forests is prohibited where they occupy less than 15 percent of a watershed. Matrix lands were designated on 16 percent of federal lands in the range of the northern spotted owl and include 17 percent of remaining late-successional forests (USDA and USDI 1994).

Adaptive management areas, which comprise 6 percent of lands covered by the Plan, are open to logging, but only as part of experiments to "develop and test new management approaches" (USDA and USDI 1994 ROD). Another 36 percent of federal acres in the range of the northern spotted owl are in congressionally withdrawn areas (30 percent), such as wilderness and national parks, and administratively withdrawn areas (6 percent), such as research natural areas. A majority of these areas, however, occur in high elevation forest types not utilized by the fisher.

The Northwest Forest Plan did not classify the Pacific fisher as a 'Survey and Manage' species (USDA and USDI 1994), meaning that the Forest Service is not required to survey for fisher before logging or conducting other activities. Furthermore, no protection is provided for fisher denning or resting sites, allowing the Forest Service to remove stands fisher may be using to raise young. Similarly, there are no requirements to protect habitat within fisher home ranges or to provide connecting habitat between fisher home ranges. Thus, if habitat utilized by individual fishers is protected it will only occur by accident through protection provided to the northern spotted owl or other 'Survey and Manage' species.

As noted above, one of the primary goals of the Northwest Forest Plan was to restart the federal timber program. Approximately 17 percent of remaining late-successional forests were placed in matrix lands and logging under the Plan is targeted towards these lands (USDA and USDI 1994 and 1999). USDA and USDI (1999) concluded:

> "The PSQ [probable sale quantity] is heavily dependent on harvesting late-successional forests for 3 to 5 more decades until early-successional stands begin to mature and become available for harvest. Although only one-third of the 3.4 million acres suitable for harvest are late-successional forest, about 90% of PSQ over the next decade will be derived from harvest of late-successional forest."

Thus, the Northwest Forest Plan is dependent on liquidating remaining late-successional forests on matrix lands to meet sale volumes promised under the Plan. Indeed, a biological assessment to determine effects on listed species of logging in the Willamette Province, including the Mt. Hood and Willamette National Forests and the Eugene District of the Bureau of Land Management, determined that remaining habitat for the northern spotted owl on matrix lands would be entirely eliminated in 28 years (Byford et al. 1998). Considering that late-successional forests have declined by as much as 80 percent (USDI 1990) and that habitat is likely a limiting factor for the fisher in the Northwest (FEMAT 1993, Lewis and Stinson 1998), allowing loss of 17 percent of remaining late-successional forests is counter to the survival and recovery of the Pacific fisher. Powell and Zielinski (1994) concluded:

"Further reduction of late-successional forests, especially fragmentation of contiguous areas through clearcutting, could be detrimental to fisher conservation."

In addition, retention standards for logging are unlikely to benefit the fisher. Retained logs, snags and dispersed live trees are not sufficient to retain the properties of fisher habitat within cutting units because such units will not have high canopy closure or multiple canopy layers, which are key components of fisher habitat (e.g., Seglund 1995, Dark 1997, Truex et al. 1998, Carroll et al. 1999, Zielinski et al. 2004a). Similarly, requirements to protect 100 acres of habitat around spotted owl activity centers and to retain 15 percent of green tree volume, 70 percent of which is required to be in aggregates greater than 0.2 hectares, are unlikely to provide any suitable habitat for the fisher in the short-term because fishers avoid crossing harvested areas with low overhead cover to reach forest aggregates or spotted owl activity centers (Rosenberg and Raphael 1986, Seglund 1995, Dark 1997). Although retaining logs, snags, and green trees will confer some of the characteristics of late-successional forest to developing stands following cutting, which was the basic intent, the Plan provides no guarantee that rotation lengths will be suffieient to allow development of suitable fisher habitat, including these structures. In addition, a substantial portion of the snags, logs; and green trees may not persist to the age when suitable cover for foraging, resting, and denning habitat has developed before being logged, making such structures nominal at best. The Plan also fails to provide assurances that once habitat has developed following cutting, the spatial pattern of the habitat will be able to support resident fishers or allow dispersal of fishers to higher-quality core habitat areas.

The late-successional reserves designated under the Northwest Forest Plan fail to provide substantial protection for the existing fisher population in northern California and are unlikely to facilitate recovery of the fisher to a larger portion of Oregon and Washington, which is necessary to alleviate the current isolation of the northern California population from the larger continental population.

Much of the highest-quality fisher habitat is outside of the reserves either because these reserves are too high in elevation or because they contain logged forests. For example, Carroll et al. (1999) used a multivariate analysis of the habitat characteristics surrounding known fisher locations to develop a habitat model for northwestern California and southwestern Oregon that would predict the probability of fisher detection. According to this analysis, late-successional reserves only harbor 7.7 percent of the area with a high probability of fisher detection (>0.67). Furthermore, wilderness areas only contain 2.8 percent and national and state parks only contain 12.2 percent of the area. Thus, only 23.7 percent of those areas most predicted to harbor fishers in northwest California and southwest Oregon are currently protected (Carroll et al. 1999). Of the remaining area, 65.9 percent is either tribal or privately owned and 11.4 percent is national forest matrix lands. Similarly in Oregon and Washington, protected federal lands, including late-successional reserves, occupy a fairly small proportion of the landscape within the primary elevational range utilized by the fisher (Aubry and Houston 1992). Aubry and Houston (1992) documented that 87 percent of all reliable fisher records were from below 1,000 m west of the Cascades in Washington. Federal lands, however, only occupy 20 percent of the landscape below 1,000 m, and although 75 percent of these lands are protected, this amounts to only roughly 15 percent of the landscape below 1,000 m in Washington (Pacific Biodiversity Institute unpublished data). Similarly, in Oregon only 32 percent of the landscape below 1,000 m is in federal ownership and only about 21 percent is protected. Thus, fishers in northern California are far less likely to occur in areas where they will receive protection from logging, such as a late-successional reserve, and in Oregon and Washington most of the historic range of the fisher is outside federally protected lands.

Late-successional reserves also consist of large amounts of habitat that is probably unsuitable for the fisher because of logging. Only 42 percent of late-successional reserves and 29 percent of riparian reserves are currently dominated by medium to large conifers (>21 inches DBH)(USDA and USDI 1994), meaning that 60-70 percent of the reserves are dominated by young second growth or plantations and thus are likely not suitable habitat for the fisher. In addition, salvage logging, as allowed in the late-successional reserves, will result in further degradation of existing late-successional forest and the loss of large trees with suitable cavities for denning and resting sites. Snags formed by insect outbreaks, wind, fire, or other disturbances form an integral part of late-successional forests and high-quality habitat for the fisher, which uses snags for resting and denning (Aubry et al. 1996, Truex et al. 1998). Thus, allowing their removal is counter to the maintenance of high-quality fisher habitat and late-successional forests.

Finally, the late-successional reserves were not designed to ensure the survival and recovery of the fisher, nor were they analyzed to determine if they would serve this function. Thus, it is unknown whether or not the reserves will facilitate recovery of the fisher to a large enough portion of Oregon and Washington to reconnect populations in northern California with those in British Columbia or if the reserves will support a stable, well-distributed population of fisher. To the contrary, given that late-successional reserves harbor a small portion of the current and potential fisher habitat in the Pacific Northwest, it is unlikely that they are sufficient to accomplish these goals and ensure the survival and recovery of the fisher in California and throughout its West Coast range. Indeed, a panel of leading scientists determined that the fisher has a relatively low probability (63 percent) of having a stable, well-distributed population in Washington, Oregon and northern California (FEMAT 1993).

Despite these deficiencies, the Northwest Forest Plan had offered at least some minimal protection for some old-growth forests critical to fisher conservation by protecting some late-successional reserves, northern spotted owl sites, and occupied habitat for rare 'Survey and Manage' species. However, despite more than a century of intensive logging in the Pacific Northwest that has resulted in the endangerment of many old-forest dependent species, the timber industry strongly opposed even those minimal protections for remaining old-growth habitat and imperiled species since the enactment of the Northwest Forest Plan. Industry lobby groups persuaded the Bush Administration to initiate a multi-stage process to dismantle certain provisions of the plan. For example, the 'Survey and Manage' program was recently removed as a standard and guideline from forest management plans within the range of the northern spotted owl.

In March 2002, the Bush Administration settled an industry lawsuit involving the Survey and Manage program by proposing to eliminate the program altogether. The program required that the Forest Service and Bureau of Land Management survey for rare species and to refrain from logging where necessary to ensure their survival. While the fisher was not designated as a survey and manage species, the additional protection from logging in late-successional reserves provided some indirect benefits to fishers. The final Record of Decision to amend the Land and Resource Management Plans to remove the Survey and Manage mitigation measure standards and guidelines in national forests under the jurisdiction of the Northwest Forest Plan – including the Shasta-Trinity, Klamath, Lassen, Mendocino, and Six Rivers national forests in California –was signed in July 2007.

Moreover, the U.S. Fish and Wildlife Service issued a proposal to revise the existing designation of critical habitat for the northern spotted owl, based on a flawed draft recovery plan that was criticized by leading spotted owl biologists (see e.g., Wildlife Society comments on the Draft Recovery Plan for the Northern Spotted Owl, 9 August 2007). The critical habitat proposal included 1.8 million acres in Washington, 2.2 million acres in Oregon, and 1.3 million acres in California, totaling 5.3 million acres. The original critical habitat designation totaled nearly 6.9 million acres. Fed. Reg. 50 CFR Part 17. Vol. 72 No 112, Tuesday, June 12, 2007. While not a substitute for ESA listing for the fisher, protection of critical habitat for the spotted owl provides some protection for fisher habitat as well.

In sum, the Northwest Forest Plan allows the continued degradation of a substantial portion of remaining late-successional forests and fails to protect sufficient habitat to ensure the recovery and survival of the fisher in a stable and well-distributed portion of its historic range. Recent efforts by the timber industry and the Bush Administration to weaken the Northwest Forest Plan and slash protections for spotted owl habitat will further degrade old-growth and mature forests and push the fisher towards extinction in northern California.

Overall, the existing Forest Service regulations governing management of national forests in California do not provide sufficient standards and guidelines to protect the fisher from extinction. The 2004 changes to the 2001 Sierra Nevada Framework; the current effort to eliminate the fisher as a management indicator species on five national forests in the Sierra Nevada and one national forest in northern California; the lack of adequate protection for fisher in the 2004 Giant Sequoia Monument management plan and the Kings River Administrative Study; and the weakening of already insufficient provisions protecting fisher habitat in the Northwest Forest Plan confirm the Forest Service's disregard for the preponderance of scientific data about fisher habitat needs that were painstakingly gathered over the course of nearly two decades, and the failure of the Forest Service to follow recommendations provided by the agency's own scientists and other leading fisher experts. Given the highly imperiled and isolated status of the remaining Pacific fisher populations in California, current Forest Service regulations fail to

adequately protect the fisher, allow significant additional degradation of habitat, and contribute to the present trend towards the fisher's extinction.

II. Other Public Lands Regulations

Bureau of Land Management

Bureau of Land Management (BLM) lands are scattered throughout the foothills of the Sierra Nevada. Beck and Gould (1992) estimated that in the Sierra Nevada there are approximately 68,500 acres of potentially suitable habitat for the California spotted owl on BLM lands (Beck and Gould 1992). Many of these acres are likely not fisher habitat, however, because the owl uses habitats not utilized by the fisher, such as low elevation riparian woodlands. Forested BLM lands within the Sierra Nevada are managed partially for timber production, where unevcn aged harvest is emphasized. Other BLM lands are managed primarily for livestock grazing and recreation. The fisher has not been given any special management status on BLM lands in the Sierra Nevada, nor does the BLM routinely consider or mitigate the effects of its actions on the owl.

BLM lands occupy approximately 344,200 acres in northwest California. Like national forests in the range of the northern spotted owl, BLM lands are managed under the Northwest Forest Plan. In addition to the protections provided by this Plan, 640-acre diversity/connectivity blocks were established on BLM lands, where 25-30 percent of the area should be maintained as late-successional forest, rotations should exceed 150 years, and 12-18 green trees per acre should be retained when cutting. On BLM lands outside of reserves, 15 percent retention is not required as on national forest lands. Instead, they only have to retain 6-8 green trees per acre. The same concerns regarding the Northwest Forest Plan on national forests apply to BLM lands. Lack of regulation on private lands has resulted in liquidation of most fisher habitat in squares adjacent to BLM land. As a result, any habitat provided by the Northwest Forest Plan may be unavailable to the fisher because of the fragmented distribution in which the species it is likely to occur.

Two recent developments are indicative of the BLM prioritizing timber harvest over protection for endangered, threatened, and sensitive species. First, similar to the Forest Service, the BLM signed a Record of Decision in July 2007 to amend the Resource Management Plans for districts within the range of the northern spotted owl to remove the 'Survey and Manage' mitigation measure standards and guidelines. Second, the BLM is currently proposing to eliminate the designation of late-successional reserves on 2.6 million acres of Oregon and California Railroad ("O&C") lands in Oregon. This proposal would place the O&C Act's timber provisions above other uses as defined in the Federal Land Policy and Management Act. Nauman and DellaSala (2007) note that the BLM O&C lands support approximately 900,000 acres of mature and old-growth forests, including some of the last remaining tracts of low-elevation, contiguous forests in southwest Oregon. The authors report that:

> "the BLM's proposed alternative would nearly triple logging...including a doubling of the area of old growth forests logged...In the first decade, BLM proposes to clearcut 143,400 acres or 12% of the harvest land base...In addition, the agency's preferred alternative would reduce late-sucessional reserves (LSRs) established under the [Northwest Forest Plan] by 47% from approximately 936,000 acres to 494,000 acres..."

While the BLM's O&C lands are in southwest Oregon, the population of Pacific fishers affected by the proposal is part of the same population of fishers in northwestern California. Thus, the reduction of fisher habitat proposed by the BLM in Oregon is likely to negatively impact fishers in northern California as well, by further diminishing an already small, isolated, imperiled population. Scientists have recognized that expansion of the fisher back into its historic range is critical for the recovery of the species. The BLM's proposal significantly reduces the capability of the species to re-colonize northwards through Oregon and Washington and to re-connect with the extant Pacific fisher population in British Columbia.

National Park Service

National parks in the California range of the fisher include Kings Canyon/Sequoia, Yosemite, Lassen Volcanic, and Redwood. In general, management of these Parks is consistent with the maintenance of fisher habitat. However, significant portions of most of these Parks are above the elevational range utilized by the fisher. The primary threats to fishers within National Parks are roads and recreation. For

example, four fishers were killed by vehicles from 1992-1998 in Yosemite National Park (Chow, personal communication). Heavily used trails have the potential to fragment fisher habitat and disturb fishers.

State Lands

In the Sierra Nevada, there are 16,580 acres in state parks, 13,840 acres in two state forests, and 3,320 acres held by the University of California (Beck and Gould 1992). Recreation is the main threat to fishers occurring in the state parks, but the severity of impacts probably varies between the individual parks based on use and management objectives. Logging occurs in the state forests and has substantially reduced suitable fisher habitat. For example, only 960 acres of the 4,807-acre Mountain Home State Forest in Tulare County remain in an old-growth condition and only 2,000 acres of the 9,033-acre Latour State Forest have a significant large tree component (Beck and Gould 1992). Logging is continuing on both of these state forests. Protection afforded to the Pacific fisher on state lands by existing regulations is essentially the same as on private lands, meaning there is little to no specific regulations to protect the fisher. Similarly, state forests in northwestern California comprise a small overall area in widely spaced parcels that are not managed to maintain late-successional characteristics.

III. Private and Tribal Lands Regulations

a. Private Lands

Because private lands comprise a significant portion of the Pacific fisher's range in the Sierra Nevada and northern California (Verner et al. 1992, Carroll et al. 1999), their management is critical to ensuring the presence of habitat that can support successful denning, resting, foraging, and dispersal of individuals. This is particularly true both of private lands on which fishers are currently found in the southern Sierra Nevada and northern California, as well as of private lands in the central and northern Sierra Nevada that are important to facilitating fisher dispersal between the two populations.

California Forest Practices Rules

The primary body of regulation affecting management of the fisher on private lands is the California Forest Practices Rules (hereinafter cited as "the Rules"). The Rules are administered by the California Department of Forestry and Fire Protection (CDFFP), and are the regulations implementing the Z'berg Nejedley Forest Practices Act of 1973 (4 Pub. Res. Code Ch. 8). The Rules provide for timber harvest practices and site preparation practices to be utilized. The Rules require timber operators to produce a Timber Harvest Plan (THP) that is intended to serve as a substitute for the planning and environmental protection requirements of the California Environmental Quality Act of 1970 (Pub. Res. Code sections 21000-21177). THPs are comprised of a lengthy checklist and supporting documentation, or in the case of the majority of the plans exempted from the THP process, by 1-2 page applications. The Rules allow significant alteration of fisher habitat and do not provide protection of elements essential to fisher habitat, such as large trees, snags and downed wood, and high canopy closure. The lack of direction to protect these habitat elements has resulted and continues to result in degradation and destruction of late-successional habitat utilized by the fisher. Beardsley et al. (1999), for example, conclude:

> "Any increase in old-growth area in the Sierra Nevada ecosystem, would have to come mostly from the unreserved areas of the national forests, because these forests contain most of the forests having a mean diameter greater than 21 inches (59,000 acres of that was already old-growth). Most of the area in private ownership is expected to be managed for non-old-growth values."

Lack of forests with late-successional characteristics on private lands is not surprising given that the applicable rules require maximizing timber production utilizing intensive logging methods, and fail to provide any effective protection for fishers.

In the following sections we discuss numerous ways in which the Rules are inadequate to provide for the fisher and its habitat. In support of this discussion, we reference a review of 416 timber planning documents that were submitted to the California Department of Forestry between 1990 and 1998, from an analysis conducted for the federal ESA petition to list the Pacific fisher (Greenwald et al. 2000). Timber planning documents were selected from 18 locations within the range of the fisher. Each location was described by an 8,000 acre circle. Any timber planning document that occurred partially or wholly within the 8,000 acre area was included in the analysis.

First, the Rules fail to recognize the fisher as a "Sensitive Species." The Rules contain no explicit protection for the fisher, in part because it is not a designated sensitive species under the Rules. If this classification were given, the Board of Forestry would be required to "consider, and when possible adopt...feasible mitigation [measures] for protection of the species" that are based on the best available science (Forest Practice Rules § 919.12 (d)). Even if the fisher was designated as a sensitive species, however, protection of the species is not assured since the only real requirement is that the Board "consider" feasible mitigation measures, and there is no requirement that mitigation measures actually be implemented. While designation as a sensitive species provides almost no real protection, lack of such designation means the fisher has no explicit protection whatsoever under state regulation.

The Rules offer no protection for fisher denning sites on private lands. Protecting the den trees themselves as well as sufficient habitat to buffer the effects of disturbance is important to ensuring reproductive success (Campbell et al. 2000). Lamberson et al. (2000) demonstrate in a simple population growth model that both female survival and fecundity must be high for the fisher population to be stable in the southern Sierra Nevada, where the documented numbers of fishers are extremely low (Campbell et al. 2000). Because there are so few fishers in the southern Sierra, the disruption of den sites and associated habitat would likely result in the extirpation of the species from the Sierra Nevada. Similarly, on the north coast, where low female survival is a cause for concern (Truex et al. 1998), failure to protect den sites is counter to maintaining a stable population.

Logging as allowed under the Rules results in degradation and destruction of critical features of habitat for the fisher. Because the logging practices named in the Rules are focused on the use of methods to achieve maximum timber production, extensive depletion of fisher habitat has occurred and will continue to occur.

For all logging prescriptions under the rules that apply to the THP process, silvicultural objectives are defined as follows: "[t]he RPF [registered professional forester] shall select systems and alternatives which achieve *maximum sustained production* of high quality timber products." (F.P.R. 14 CCR Ch. 4 § 913) (emphasis added). The Rules favor regeneration methods for achieving this objective (F.P.R. 14 CCR Ch. 4 § 913 (a)). Regeneration methods "are designed to replace a harvestable stand with well spaced growing trees of commercial species. Even age management systems shall be applied..." (F.P.R. 14 CCR Ch. 4 § 913.1).

This objective of "maximum sustained production" of timber is in direct conflict with the retention of the characteristics that comprise high-quality fisher habitat. For example, this objective and the regeneration methods described depend on the removal of large trees to provide high-quality timber, which in turn leads to the removal of den, rest, and forage sites of the fisher. Regeneration methods have resulted in the removal of key components of fisher habitat, such as large, old trees, multi-layered canopies, snags, and downed logs (Powell and Zielinski 1994) over a substantial portion of the private lands in the Sierra Nevada and north coast. Indeed, this is the clear intent of the Rules by stating that harvest should be designed to create "a harvestable stand with well spaced growing trees of commercial species." Specific regeneration methods recommended in the Rules include clearcutting, used in 51 of the 416 cases reviewed by Greenwald et al. (2000), in which all of the stand is removed at once; seed tree regeneration, in which most of the stand is removed, and then the few remaining seed trees are removed in a second step (20 cases); shelterwood regeneration, in which a stand is removed in three steps (39 cases); transition (21 cases); and selection and group selection logging (82 cases). Many THPs proposed more than one of these harvest prescriptions. These regeneration methods entail complete removal of forest canopy and large trees, and as is clear by their definitions, would result in elimination of fisher habitat. In addition, regeneration methods result in significant reductions in canopy closure. This has the potential to severely degrade and/or destroy fisher habitat by reducing canopy closure to less than that selected by fishers, and by eliminating the multi-layered canopies that characterize the species' habitat. In addition, the goal of maximum timber production and the various harvest methods are likely to result in removal of merchantable snags and or trees appropriate for the future recruitment of large snags (Ohmann et al. 1994). As described above, Britting (2002) and Greenwald et al. (2000) found that since 1999 there has been an increase in even-aged management and the use of clearcutting on private lands in the Sierra Nevada, and this management class now generally exceeds all other types.

The Rules also recommend some uneven-age regeneration prescriptions, including transition, selection, and group selection logging (F.P.R. 14 CCR Ch. 4 § 913.1, 913.2). The uneven age methods involve removal of individual trees or groups of trees. Though occurring over several entries, these methods on private lands also are likely to result in removal of habitat characteristics required by the fisher—large, old trees, snags, and dense, multilayered canopies. Verner et al (1992) found that traditional selection logging has resulted in depletion of large, old trees. Beardsley et al. (1999) affirm this in concluding that there are few large trees on private lands. There is no reason to assume that selection logging on private lands would be more likely to result in maintenance of fisher habitat than re-generation logging.

Lastly, the Rules define several "intermediate treatments." (F.P.R. 14 CCR Ch. 4 § 913.3) These treatments include both commercial thinning and sanitation-salvage logging. Under the Rules, commercial thinning is defined as follows:

> "Commercial thinning is the removal of trees in a young-growth stand to maintain or increase average stand diameter of the residual crop trees, promote timber growth, and improve forest health. The residual stand shall consist primarily of healthy and vigorous dominant and codominant trees from the preharvest stand (F.P.R. § 913.3)."

This treatment is designed to maintain young, evenly spaced stands of healthy, straight trees. Generally, such stands lack most or all of the stand components required by the fisher (Powell and Zielinski 1994). From the Greenwald et al. (2000) review of 416 timber planning documents, it does not appear that commercial thinning is a dominant logging prescription in the areas reviewed. Of the 416 planning documents reviewed, only 28 utilized commercial thinning methods. The sanitation/salvage method was one of the most commonly utilized prescriptions under exemptions to the timber planning process (see below) and is defined in the Rules as removal of trees that are "insect attacked or diseased trees...[or, for sanitation logging] trees...that are dead, dying, or deteriorating" because of damage from a variety of causes (F.P.R. 14 CCR Ch. 4 § 913.3 (b)). The Rules provide little criteria for defining what constitutes a "dying or diseased" tree. Further, the rules state that "the RPF shall estimate the expected level of stocking to be retained (*see* Forest Practice Rules, 14 CCR Ch. 4 § 913.3 (b))," rather than prescribing specific stocking levels. Thus, it is clear that this prescription could result in removal of numerous large trees, significant reduction in canopy closure, and removal of all merchantable snags or potential snag recruitment trees.

In addition to intermediate and regeneration methods, there is an additional but ill-defined catch-all prescription of "alternative" that was used in 32 of the 416 of cases reviewed by Greenwald et al. (2000). These prescriptions appear to allow the destruction of key habitat components, as do the regeneration prescriptions described above.

In sum, the regeneration methods and intermediate harvest methods are likely to be extremely destructive to critical characteristics of fisher habitat, including large trees and multilayered forest canopy. Without effective restrictions, logging conducted under these Rules has destroyed and will continue to destroy and degrade fisher habitat over a significant portion of its range. Logging operations exempt from stocking and analysis requirements are also likely to pose significant threats to fisher habitat. The Rules exempt a number of logging operations from the Timber Harvest Planning process. Approximately 69 percent (287 out of 416) of the timber harvest documents reviewed by Greenwald et al. (2000) were in this category. Specific exemptions from the THP process include "harvesting of dead, dying, or diseased trees of any size" (utilized in approximately 175 reviewed cases), logging of 3 or less acres (25 cases), "other" (57 cases), and a number of other lesser used exemptions (F.P.R. 14 CCR Ch. 4 § 1038).

The various exemptions from the THP process and requirements include a number of specific restrictions. The exemption for harvest of "dead, dying, or diseased trees" was utilized most often in the cases reviewed by Greenwald et al. (2000). This exemption allows logging of no more than 10 percent of the average volume on each acre. In addition, a number of specific restrictions of potential impacts are built in to the exemption. For example, new road construction is prohibited. However, there are no specific restrictions on impacts to fisher den sites or habitat. For example, there are no restrictions on the size of trees removed. In addition, the exemption guidelines do not limit the frequency in which an exemption can be used for the same area. In numerous cases, the Greenwald et al. (2000) review of timber planning documents indicated that exemptions had been submitted each year for as many as seven years on

the same area. In most cases, the areas with repeated exemptions exceeded 20,000 acres in size. Under this exemption, private landowners can enter stands as often as an exemption is filed (often yearly) and remove up to 10 percent per acre of volume, eventually removing all attributes of suitable fisher habitat.

In sum, the dead, dying and diseased exemption results in the degradation of important characteristics of fisher habitat. A CDFFP forester estimated that only about 10 percent of exempted plans are subject to any review by the CDFFP, and stated that plans filed under this exemption are considered a "non-discretionary" document, which the CDFFP is obliged to approve (pers. comm. with Dave Macnamara to N. Greenwald). Finally, "emergency management" of timber is also exempted from the requirements of the THP process. This exemption applies to stands that have been substantially damaged by fire or other natural causes. This exemption was used in 33 of the cases reviewed by Greenwald et al. (2000). Because the Rules fail to define what constitutes a "substantially damaged stand," this exemption could be used in any number of situations that hardly constitute an emergency. For example, it could be used to clearcut a stand where a fire had burned, but left most of the trees alive.

Given the large number of acres and timber harvests occurring under these exemptions within the range of the fisher, this lack of protection raises serious concerns about the effects of logging on fisher habitat. Coupled with the degradation and destruction of fisher habitat that is occurring under the THP process, current regulation of logging on private lands is clearly not adequate to protect the fisher from additional population declines.

The Rules' requirement for mitigation of significant impacts to non-sensitive species fails to provide practical protection to the fisher or its habitat. While the Forest Practices Rules provide no explicit protection of the fisher and its habitat, the Rules do require that where significant impacts to non-listed species may result, the forester "shall incorporate feasible practices to reduce impacts" (F.P.R. § 919.4, 939.4, 959.4). However, the Rules do not mandate surveys be conducted for fishers, do not require identification of fisher habitat, and provide no information concerning possible thresholds over which impacts to fisher habitat or the species might be "significant." No explicit requirements or technology for assessing cumulative impacts exist. Thus, it is very unlikely that this requirement would result in significant additional protection for fisher habitat.

The Rules' provision to "incorporate feasible practices to reduce impacts" where significant impacts to non-listed species may occur provides almost no protection for the fisher because impacts, significant or not, are not identified. Further, the Rules fail to identify what constitutes a significant impact, and reduction of impacts is optional, rather than required.

The Rules' requirements for assessment of impacts to late successional forests and for mitigation of impacts do not appear to result in any significant protection of habitat for the fisher. The Rules require very limited assessment of impacts to and almost no protection for late-successional forest stands within THP areas (F.P.R. § 919.16, 939.16, 959.16). The Rules require that "when late successional stands are proposed for harvesting and such harvest will significantly reduce the amount and distribution of late succession forest stands," then information about these stands must be included within the THP (F.P.R. § 919.16.). In practice, this provision is almost never invoked. Of the 416 timber harvest documents within the range of the fisher that were reviewed by Greenwald et al. (2000), late-successional forests were mentioned in only seven cases. Thus, out of the 2,366,753 acres of private land impacted by these timber harvests, only 728 acres of late-successional forest habitat were identified.

The failure of timber harvest documents to identify impacts to fisher habitat with late-successional forest characteristics appears to be due to several factors. First, by definition under the Forest Practices Act, late-successional forest stands less than 20 acres in size are not recognized. Conclusions from Beardsley et al. (1999) and Bolsinger and Waddell (1993) suggest that large diameter trees that would be needed to satisfy the definition of CWHR classification 5M, 5D, and 6 occur at extremely low densities on private lands. Thus, the few scattered large trees that may exist on private lands are unlikely to occur in sufficient densities within stands exceeding 20 acres to merit identification as late-successional forest. It is likely that the last remnants of late-successional forests on private lands lack protection because they cover too small an area. Large, green residual trees in stands smaller than 20 acres are often the only remaining complex structural elements in a matrix of younger forest on some intensively managed private lands, and as such they provide important habitat for wildlife species like the fisher that normally are associated with older forests (Hunter and Bond 2001). Second, no analysis of late-successional forest is required unless the

timber harvest plan itself would result in a significant reduction of habitat. However, the Rules fail to provide guidance on what might constitute a significant reduction in late-successional forest habitat or require private landowners to sum losses of late-successional forests across ownerships. Thus, it is possible for a cumulatively significant reduction of late-successional forest to occur because the THP process allows incremental steps in this loss to be ignored. Even if invoked, however, this provision requires analysis and mitigation of impacts only when feasible (F.P.R. § 919.16 (a), (b).). No actual protection of old forest characteristics or acres of habitat is required.

The late-successional forest provision provides little protection to older forests even if invoked, and is invoked in practice in so few cases that it appears unlikely that this provision is providing meaningful protection for even a small proportion of fisher habitat.

The Rules' requirement for retention of snags provides little or no protection to this feature of fisher habitat. Although snags are an important component of fisher habitat and are important den and rest sites, the Rules list numerous conditions under which snags may be removed and fail to require that a minimum number of snags be retained. Further, the Rules suggest removal of large (F.P.R. § 919.1 (d)) snags near roads and ridge tops (F.P.R. § 919.1 (a)(1), (a)(2)). Of the 416 timber harvest documents reviewed by Greenwald et al. (2000), only five discussed retaining snags. Of these, three documents indicated retaining only snags that were visibly used by wildlife, one indicated that non-merchantable snags would be retained, and one indicated that all merchantable and non-merchantable snags would be retained. Eighty-two of the 416 timber harvest documents stated that snags would be removed near roads, skid trails, and landings, or more broadly. Reasons given for removal of snags included "hazard," fire danger, and a statement that merchantable snags would be removed. It was not clear that any snags would be retained in the remaining cases.

The Rules fail to require retention of a minimum number of snags and encourage removal of snags to such a degree that it is extremely unlikely that snags would be retained at levels needed to maintain suitable habitat for the fisher. In practice, few timber harvest documents appear to require retention of snags.

Additional protections for the listed northern spotted owl and marbled murrelet in northern California fail to provide significant protection for the fisher on private lands. Under the California Forest Practice Rules, private landowners wishing to harvest timber within the range of the northern spotted owl must avoid "take" of an owl, which is defined as disruption or impairment of feeding, breeding, or sheltering. Determination of take is made by the U.S. Fish and Wildlife Service based on a review of information on suitable habitat, owl locations, owl surveys in the project area, and the planned harvest. A landowner can avoid a take determination by applying the following guidelines to any owl activity center within 1.3 miles of the project boundary: nesting habitat must be maintained within 500 feet of the activity center, sufficient roosting habitat must be maintained within 500-1,000 feet of the activity center to support roosting and provide protection from predation and storms, 500 acres of owl habitat must be provided within a 0.7 mile radius of the activity center, and 1,336 total acres must be provided within 1.3 miles of any activity center. Landowners can avoid U.S. Fish and Wildlife Service oversight of their Timber Harvest Plans if they develop a "spotted owl management plan," which requires the same retention standards outlined above except that all of the 1,336 acres of habitat within 1.3 miles must be maintained as nesting or roosting habitat rather than foraging habitat. A landowner also can avoid U.S. Fish and Wildlife Service oversight of individual timber harvest plans by creating a "habitat conservation plan" (HCP). The Rules do not specify provisions to protect the marbled murrelet, instead stating that if a project is likely to result in "take" of a murrelet, then an incidental take permit from the U.S. Fish and Wildlife Service must be obtained.

Although studies indicate that spotted owls and fishers are associated with many of the same habitat characteristics, there is no guarantee that protecting owl habitat will provide substantial protection for the fisher. Indeed, because fishers require larger areas and are more sensitive to habitat fragmentation than owls (Lewis and Stinson 1998), habitat retained around owl activity centers may be unavailable to the fisher. Even this limited amount of protection, however, is not applied on many private lands in northern California. Instead, the largest industrial owners have opted to create HCPs and receive an incidental take permit from the U.S. Fish and Wildlife Service, allowing them to destroy late-successional forests surrounding owl activity centers and occupied murrelet habitat.

HCPs by the two largest private landowners in northern California provide little protection for the fisher. Both the Simpson Timber (450,000 acres) and Pacific Lumber Companies (200,000 acres) have adopted HCPs for lands under their management (Simpson 1992, Pacific Lumber Company 1999). Neither of these plans contains specific provisions to protect the fisher. Instead, they both work under the assumption that protections for the northern spotted owl, marbled murrelet, or anadromous fish will suffice to protect the fisher, despite lack of any data or analysis to support this claim. In particular, fishers were not surveyed or studied in conjunction with either plan and thus there is no basis for claims that habitat protected by either plan provides substantial benefit to the fisher.

Adopted in 1992, the Simpson HCP sets aside 39 parcels with an equal number of owl activity centers, totaling 13,242.5 acres. The parcels range in size from 61.3 to 2002.5 acres with a majority (27) under 300 acres. Considering that this acreage is divided into 39 parcels and that the HCP fails to designate travel corridors of suitable habitat between the parcels, much of this habitat is likely unavailable to the fisher. Even if this same amount of acreage was protected in one single block, however, it would be unlikely to support a viable and well-distributed population of the fisher because the total acreage of the parcels only roughly equals the size of two male fisher home ranges (Truex et al. 1998). In exchange for protecting this limited amount of habitat, Simpson received permission to take 3-5 owl pairs per year for the next 30 years, meaning the retention standards for owl activity centers described above are waived. Based on the requirement to protect 1,336 acres within 1.3 miles of all owl activity centers under the waived retention standards, protection for 30-50 owls could have resulted in protection of roughly 40,000-67,000 acres.

The Pacific Lumber Company's HCP requires sale of 7,400 acres to the United States Government to protect old-growth redwood trees, set aside of 7,728 acres for the marbled murrelet, establishment of riparian buffers, maintenance of 108 owl activity centers, retention of some structural components post-harvest, and maintenance of 10 percent of each watershed in late-seral condition. Riparian buffers range from 30 feet on intermittent streams to 170 feet on fish bearing streams, of which 100 feet is off-limits to harvest and 70 feet is open to limited harvest. Retention standards include leaving 4.8 snags/acre >15 inches DBH, four live cull trees, all live hardwoods >30 inches DBH, and two logs/acre >15 inches diameter and over 20 feet long.

Despite these protections, the Pacific Lumber HCP is unlikely to provide significant protection for the fisher because it allows continued habitat loss and fails to enact specific protections for the fisher, besides future monitoring. The HCP allows logging of a substantial portion of remaining late-successional forest on Pacific Lumber Company lands. Of an estimated 26,147 acres of old-growth (12 percent of their total lands), 57 percent is available for harvest (USDI et al. 1999). It also allows Pacific Lumber to take 37 owl territories and provide minimal protection for 28 more, meaning the retention standards for activity centers described above are waived. Similar to the Simpson HCP, the total protected acreage (15,128 acres) is small compared to the home range requirements of the fisher, there is no guarantee the habitat is currently or will be utilized by the fisher, and travel corridors were not designated to ensure availability of habitat for the fisher. Finally, retention of snags, live trees, large hardwoods, and logs will retain some of the characteristics of quality fisher habitat. However, because the HCP lacks a provision that these stand characteristics be retained in stands with suitable canopy cover in a spatially explicit manner to facilitate their use by fishers, there is no reason to believe that the HCP will ensure the continued existence of the fisher on Pacific Lumber Company lands.

In conclusion, few or none of the logging prescriptions described in the Rules would result in retention of habitat features critical to the maintenance of fisher populations on private land. Logging practices within the range of the Pacific fisher appear to be extensive, sometimes affecting each acre an average of six times over the past eight years. Further, the Rules do not provide any measures that offer explicit protection for the fisher, provide no effective measures to protect fisher habitat in any meaningful quantity, and fail to provide a mechanism for identifying individual or cumulative impacts to the fisher or its habitat on private lands. Finally, there is no evidence to support claims that protections for the northern spotted owl, marbled murrelet, or anadromous fish are sufficient to protect the fisher. The net result is that the Rules do not regulate logging on private lands in a manner that is adequate to maintain fisher habitat or populations on private land within California.

SPI Candidate Conservation Agreement with Assurances

Fisher conservation on private lands is especially difficult given a current lack of suitable fisher habitat on private lands in California, the inadequate existing regulatory mechanisms to protect fisher habitat from logging on private timberlands, and the increasing trend towards clearcutting as a silvicultural method as documented in THPs. Thus, an agreement being developed between the U.S. Fish and Wildlife Service, California Department of Fish and Game, and Sierra Pacific Industries (SPI) to reintroduce fishers onto 160,000 acres of cutover timberlands (the Stirling Management Area) in the northern Sierra Nevada/southern Cascades presents a troubling new threat to the species. The Federal Register Notice for the Proposed Candidate Conservation Agreement with Assurances for Fisher for the Stirling Management Area, Sierra Pacific Industries, Butte, Plumas, and Tehama Counties, CA (Fed. Reg. Vol. 72, No. 195, October 10, 2007; pp. 57596-57598) explains:

> "Under a Candidate Conservation Agreement with Assurances (CCAA), participating landowners voluntarily implement conservation activities on their property to benefit proposed species, candidate species, and species likely to become candidates in the near future. Under a CCAA, non-Federal property owners commit to implement mutually agreed upon conservation measures which, when combined with benefits that would be achieved if it is assumed that those conservation measures were to be implemented on other necessary properties, would preclude the need to list the covered species. In return for the landowner's proactive management, the [U.S. Fish and Wildlife] Service provides an enhancement of survival permit under section 10(a)(1)(A) of the Act which, if the species were to become listed, would authorize the take of a specified number of individuals."

In other words, if SPI implement agreed-upon "conservation activities" on their property, they are able to proceed with logging that may harm individual fishers. In exchange for allowing fishers to be re-introduced into the Stirling Management Area, the company would receive a permit to "take" a specified number of those fishers, even if the fisher is eventually listed as endangered or threatened under the federal Endangered Species Act. On paper, the reintroduction may seem like a benefit to fishers; however, the reality is that the Stirling Management Area is poor habitat for reintroduction, and the conservation measures proposed by SPI are insufficient to maximize the success of the reintroduction. Astoundingly, under the agreement, SPI would not be required to change their current management practices on the Stirling Management Area to benefit fisher habitat.

It is well-established that optimal fisher habitat is comprised of large blocks of contiguous and interconnected late-successional forest with a high level of structural diversity, high canopy closure, large trees and snags, downed wood, and few openings (see references herein). Unfortunately, the habitat on the Stirling Management Area is far from optimal. The CCAA states "[o]ver the 20-year period of the agreement there will be a net increase in the amount of fisher denning/resting habitat on the enrolled lands from the current amount of approximately 23% to approximately 33% of the total enrolled acreage." Yet, rather than requiring that the private lands selected for fisher reintroduction consist of high-quality habitat as defined in the published literature, the CCAA allows SPI to decide the definition of suitable fisher habitat. According to the Associated Press (December 13, 2007), SPI stated that it would "clear most of the trees" from the 160,000-acre Stirling Management Area, leaving behind black oaks "for the fisher." There is no evidence that forests clear-cut of conifers and comprised mostly of regenerating black oaks provides suitable fisher habitat.

The CCAA does not oblige SPI to maintain trees of a specific size or require a minimum acreage for stands of larger trees, and provide connectivity between these stands, in order to provide suitable fisher habitat. The CCAA says only that SPI will follow their existing forest management policies, under which they define fisher habitat ("Lifeform 4") as including a minimum average of 9-20 trees per acre at least 56 cm (22 inches) diameter (CCAA at p. 13). The trees in this size class are far smaller than documented fisher denning and resting conifer trees (less than half the average size; see Tables 2 and 3), and smaller than the average size of the largest trees surrounding fisher sites in all sites except the eastern Klamath (see Table 4). Thus, the size class that SPI is willing to provide for fishers is much smaller than the size actually used by the species for resting and denning. SPI claims they are providing resting and denning structure simply by increasing the distribution of stands predominated by trees over 22 inches DBH. Given that resting and denning trees are considerably larger than 22 inches, and have deformities that take substantial time to develop, the CCAA provides little guarantee that habitat will actually be suitable. Furthermore,

although the CCAA acknowledges that the fisher is dependent on structures such as snags and downed wood, the agreement does not mandate that SPI retain snags and downed wood. SPI guidelines consider fisher habitat as >60 percent canopy cover, but the CCAA does not require that a certain proportion of a watershed contain this dense canopy cover. For example, on average more than 70 percent of female home ranges in the southern Sierra Nevada were comprised of habitat with >60 percent canopy cover (Zielinski et al. 2004b). The CCAA says only that SPI will adhere to their own guidelines, but these guidelines do not require that a certain number of snags or downed wood be retained, or that a certain proportion of area be comprised of dense canopy cover, as is important for suitable fisher habitat. Moreover, the CCAA fails to provide any measure of fisher use of or survival in the area, which would be the obvious test for the success of the CCAA.

The fisher depends on contiguous forested habitat, but the CCAA does not limit clearcutting on the enrolled lands, and does not call for large continuous areas of late-seral stage forests for fisher. The CCAA defers to SPI management practices, but SPI does not agree to provide contiguous habitat for fisher of a certain size or age class. Neither the CCAA nor SPI policies guarantee that a large area of contiguous forest will be available for fisher. Under SPI policy, regeneration units can be up to 40 acres in size and can be grouped together "to eventually provide contiguous larger habitat patches of generally the same age and structure class to benefit wildlife species," (CCAA at p. 13). Although the company claims that larger patches will eventually provide wildlife value, the reality is that larger blocks of open areas are created with their clearcutting practices and that once the trees have reached a certain size, they can be harvested. Without important habitat elements such as large trees, snags, downed wood, high canopy cover, and multi-layered canopies available in significant amounts and in large, well-connected blocks across the landscape, the Stirling Management Area remains a poor choice for a fisher re-introduction site.

Furthermore, the CCAA does not prohibit any management activities known to harm fishers. The forest management activities covered under the permit include "felling and bucking timber, yarding timber, loading and landing operations, salvage of timber, transport of timber and rock, road construction and maintenance, rock pit construction and use, site preparation, tree planting, vegetation control, pre-commercial thinning and pruning, minor forest products, grazing, and fire suppression." Fed. Reg. Vol. 72, No. 195, October 10, 2007. SPI does not agree to change their management practices to benefit fisher or to curtail timber harvest or other activities within the Stirling Management Area, other than to increase stand rotation time somewhat. The CCAA states only that a certain percentage of trees will be of a certain age class by the end of the 20 year agreement; it does not require protection for particular areas such as denning or resting sites, or for specific features such as snags and downed wood, nor does it preclude harvest as soon as the trees reach a certain age. Under the CCAA, SPI is agreeing only to continue following their existing forest management guidelines, not to alter them significantly to improve conditions for fisher in this cutover habitat. In essence, SPI is offering only to let their trees grow in accordance with current practices, which means until they reach a harvestable age, and claiming that this will provide recovery habitat for the fisher.

The 12-month finding for fisher (at p. 18789) points out that habitat on industrial timberlands under conservation strategies generally does not meet the habitat needs of fisher:

> "The HCP conservation strategies generally do not provide the large blocks of forest with late seral structure that appear to be important for sustaining resident fisher populations, particularly for providing denning and resting sites".

SPI's history of logging in the Sierra Nevada is not one of concern for fisher habitat. From the period 1999 to mid-2002, SPI submitted THPs covering a total of 68,960 acres, with 41,630 acres subjected to even-aged management (i.e., clearcutting or similar methods). Furthermore, from 1992 to 2003, SPI harvested timber on 130,365 acres in the Southern Forest District alone – more than any other private landowner, and accounting for 36 percent of the total private timberland harvested during this time period. To boot, SPI employed even-aged management as a greater proportion of acres harvested than other private landowners combined (see Table 9).

The U.S. Fish and Wildlife Service developed a policy for consideration of whether conservation efforts forestall the need for listing (Policy for Evaluating Conservation Efforts, Federal Register, Vol. 68, No. 60, March 28, 2003, p. 15100). The policy considers two primary factors: (1) "the certainty that the conservation effort will be implemented" and (2) "the certainty that the conservation effort will be

effective." Under each of these factors, the Service determines whether the agreement is sufficient based on a number of specific criteria. The CCAA does not identify a staffing level, funding level, or funding source to implement the agreement. SPI does not agree to commit funds or staff time to the preservation of fisher on their lands. Committing resources to implement the effort would include setting aside large areas of undisturbed late-successional forest on the enrolled lands for use by fisher and agreeing not to harvest these areas, but SPI does not make this commitment, nor do they agree to curtail timber harvest or other destructive activities on the enrolled lands. Moreover, no regulatory mechanisms to implement the conservation effort are in place. The CCAA does not contain any regulations requiring SPI to protect the fisher: the agreement is entirely voluntary. SPI agrees to notify FWS of activities that could lead to known take of fisher, but they do not agree to forego the activities in order to protect the fisher.

Efforts to re-introduce fishers into areas from which they have been extirpated are not only laudable but necessary to prevent extinction. However, habitat for reintroduction must be of the highest quality in order to maximize the chances that the reintroduction will succeed and to ensure that taxpayer dollars are well-spent. Aubrey and Lewis (2003) found that "although fishers have been reestablished in the southern Cascade Range in Oregon for >20 years, our results show that they have not expanded their range beyond a relatively small area, suggesting that suitable habitat in surrounding areas may be inadequate to support fishers." The authors – who are leading fisher experts employed by the Forest Service and Washington Department of Fish and Game, respectively – recommended that "comprehensive feasibility studies should be conducted prior to additional fisher reintroductions," and that "such studies include explicit considerations of objectives, habitat capabilities at multiple spatial scales, genetic suitability of potential source populations, timing of releases, possible social or economic constraints, mechanics of the reintroduction, and the optimal age, sex, and number of translocated animals, among others." None of these recommendations were discussed or considered in the agreement. Given the unsuitability of habitat on SPI land for fisher, that no activities on this land are prohibited in the CCAA, and that there is a guaranteed level of human disturbance due to timber harvest and other forest management activities, it would be irresponsible to relocate fisher onto SPI property without further study and enforceable protections for the species and its habitat.

Although we support the reintroduction of fisher into appropriate habitat in the northern Sierra Nevada, we oppose the reintroduction of fisher onto SPI land under this CCAA. Neither the CCAA nor SPI policies provide enforceable protective measures for fisher. There is no evidence that habitat on SPI properties is adequate to meet the needs of fisher or that SPI properties contain the most suitable habitat in the northern Sierra Nevada for a reintroduction. It does not promote fisher conservation to reintroduce the species into an area from which they were extirpated without addressing the causes of extirpation, namely even-aged timber harvest.

In this case, the so-called 'enhancement of survival' permit is a misnomer. Implementation of this agreement would not only fail to preclude the need to list the fisher, but actually would constitute a significant threat to the species. The U.S. Fish and Wildlife Service and California Department of Fish and Game are moving forward with fisher reintroduction into an area with a paucity of the forest structures typical of fisher habitat and under the auspices of a company for whom even-aged management is the predominant silvicultural method employed. Under the Service's own criteria for evaluating conservation efforts, the CCAA clearly does not forestall the need for listing the fisher.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires full disclosure of the potential environmental impacts of public or private projects carried out or authorized by nonfederal agencies within the state of California. Section 15065 of the CEQA Guidelines requires a finding of significance if "[t]he project has the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish and wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare or threatened species." However, CEQA does not require that impacts must be mitigated. Rather it requires that if significant effects are found, mitigation must be adopted where feasible, and if determined to be infeasible, an explanation must be provided. Once significant effects are identified, the lead agency has the option of requiring mitigation for impacts through changes in the project, or to decide that overriding considerations make mitigation infeasible (Section 21002). Moreover, the bar is set

relatively high for a significance finding under CEQA; only in the rare cases that a species is on the brink of extinction and occurs in a very limited geographic area, will an individual project cause sufficient damage to meet the definition. This would be the case in areas currently occupied by fishers, and if a fisher were known to occur on a project site – which provides an important level of protection there. However, the CEQA standard would not apply in parts of the central and northern Sierra Nevada where the fisher has been extirpated.

In relation to logging projects, CEQA requirements are met through preparation of THPs. As discussed above, the California Forest Practice Rules and the timber harvest planning process are inadequate to protect fishers and their habitat.

In sum, CEQA requires analysis and mitigation where feasible for projects that are determined to have a significant effect on the environment, including wildlife populations. This has the potential to result in analysis and mitigation of effects to the fisher from timber sales and development projects in currently occupied areas, particularly if proper cumulative impacts assessments were performed. However, CEQA will not protect fisher habitat where the species has been extirpated, nor will it protect habitat on project sites within the current range but where fishers were not detected (even though it may be utilized by fishers at some point). Thus CEQA is likely unable to protect much rapidly developing fisher habitat from further degradation.

b. Tribal Lands

Information on the status and management of the fisher or its habitat on Native American lands is limited. We were only able to obtain information on the 360 km^2 Hoopa Valley Indian Reservation. Located near the center of the fisher's range in northern California, this reservation provides important habitat for the fisher (Carroll et al. 1999). In part because the fisher is of ceremonial importance to the Hupa people, the Tribe has been researching the status of the fisher on the reservation (Higley 1998). Research has included radio-collaring fishers, locating resting and denning sites, and measuring habitat. In addition, the Tribe recently enacted a forest management plan, including some protection for the fisher (Tribal Forestry 1994).

In evaluating the Hoopa Valley Indian Reservation's Plan, we recognize that the Tribe is a Sovereign Nation. We are providing the following analysis not because we think a different management regime or regulations should be imposed on the Tribe, but because management of the fisher and its habitat on the Reservation is important within the larger context of survival and recovery of the fisher on the West Coast.

Unlike any of the HCPs in the West Coast range of the fisher, the Tribe's Plan specifically prohibits forest activities from "knowingly" resulting in "take" of a Tribal species of special concern, including the fisher, without approval from the Tribal Council. However, because the Plan does not define what constitutes take or specifically prohibit activities that will result in take, it is unclear what protection this provision provides. The Plan, for example, does not specifically prohibit logging within fisher denning or resting stands, which would result in take as defined under the Endangered Species Act.

Otherwise, the Plan places 34,468 acres off-limits to logging, limits harvesting on 23,438 acres to group or single tree selection or shelterwood without overstory removal, and allows intensive timber management using a modified clearcut prescription on 36,151 acres. Under all of the above harvesting prescriptions, the goal is an 80 year rotation. Clearcuts are limited to 10 acres and must retain two-five trees and 100 cubic feet of downed wood should be left in pieces 20 cubic feet or larger. Under the shelterwood prescription, 8-14 overstory trees/acre should be retained. Retained trees, however, can be cut after 80 years. Under the group selection prescription, cutting patches are limited to two acres.

Although the Tribe's Plan sets aside a considerable portion of the Reservation, it is currently unknown whether or not this habitat is sufficient to support a viable and well distributed population of the fisher on the Reservation or in the region. All of the prescriptions will result in the continued removal of elements of late-successional forest, such as large trees, snags and logs, and high canopy closure and thus will allow for continued loss and fragmentation of fisher habitat. It is unknown to what extent 80 year old stands, which is the target rotation, provide habitat for foraging, resting or denning fishers on the Hoopa Valley Indian Reservation. In sum, although considerably more restrictive than any regulations on private lands, it is unclear to what extent the Tribe's Plan will maintain the fisher.

RECOMMENDED MANAGEMENT AND RECOVERY ACTIONS

1. Avoid logging or other activities, including salvage logging following fires, anywhere it may reduce fisher habitat value, especially in critical locations, such as the current northern portion of the occupied range near the Merced River and northwards (see Spencer et al. 2007 at p. 43).

2. If absolutely necessary, reduce risk of large areas experiencing high-severity burns within important fisher habitat by *effectively* and *strategically* treating surface and ladder fuels using the best scientific data available. Treatments should rely primarily on prescribed fire during the appropriate season rather than mechanical treatments (see Truex and Zielinski 2005). If mechanical treatments are deemed necessary, such as in areas near towns and infrastructures, protect all elements known to be important habitat features for Pacific fishers. These elements include but are not limited to medium and large conifer and hardwood trees and snags (for example, trees and snags ≥ 15 inches DBH), large down logs, multi-layered canopies, understory vegetation diversity and cover, and high canopy closure, especially in areas where current canopy closure from trees > 12 inches DBH is high, and in areas with high probability of use by fishers (Aubry and Houston 1992, Buck et al. 1994, Dark 1997, Jones and Garton 1994, Mazzoni 2002, Powell and Zielinski 1994, Seglund 1995, Truex et al. 1998, Carroll et al. 1999, Campbell 2004, Zielinski et al. 2004a, 2004b).

3. Modify the California Forest Practice rules to fully consider impacts to fisher from timber harvest on private lands, and to require protection of important habitat elements.

4. Support efforts to monitor the spatial and temporal abundance and distribution of important resting and denning structures throughout potentially suitable fisher habitat on both public and private lands (see Spencer et al. 2007). Monitoring should be conducted in occupied areas as well as in areas currently unoccupied but potentially important for population expansion and re-introduction efforts.

5. Using models of Pacific fisher habitat selection, identify the most suitable locations in the central and northern Sierra Nevada for potential re-introduction efforts that would also minimize impacts on the congeneric American marten (see Zielinski et al. 2005b). These locations should consist of the largest contiguous blocks of high-quality fisher habitat. Sierra Pacific Industries industrial timberlands should not be considered as a suitable location for fisher reintroduction unless a detailed, scientifically rigorous habitat assessment concludes that SPI timberlands provide the largest blocks of highest-quality habitat.

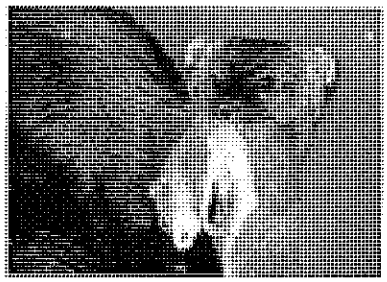
6. Modify the Kings River Administrative Project to increase habitat value for the fisher by maintaining canopy cover >70% where it exists; not reducing canopy cover to <60% over at least 70% of each watershed (or striving to create such habitat conditions over time), and retaining medium-large (e.g., ≥15 inches) trees and snags and large down logs (see Zielinski et al. 2004a).

7. Avoid permitting additional urban development and associated infrastructure (roads, etc.) in moderate- and high-quality fisher habitats. Projects requiring state permits within potential fisher habitat should thoroughly analyze potential impacts to Pacific fishers and eliminate any possible sources of mortality, such as open water tanks and high-speed roads without safe crossings.

8. Address the problem of free-roaming, unvaccinated dogs that can potentially transmit pathogens to Pacific fishers. Enforce leash laws, and patrol areas around urban develops in fisher habitat for free-roaming dogs.

9. Identify and resolve current barriers to Pacific fisher dispersal such as highways and urban developments. Provide a means whereby fishers can traverse barriers (i.e., bridges and vegetated overpasses over and under high-traffic roads) to connect areas of suitable fisher habitat.

CONCLUSION



A combination of historic trapping, logging, road building, urban development, and other factors has resulted in a significant diminution of the Pacific fisher's range in California and on the West Coast. Small, isolated, remnant populations in the southern Sierra Nevada and northwestern California-southwestern Oregon represent the only surviving native populations in the western United States. These populations are at serious risk of extinction because of a combination of continued habitat destruction caused by logging and development, predation, small population size, and population isolation. The entire Pacific fisher population in California may be as low as 850 individual animals. As outlined in this petition, current regulations fail to provide sufficient habitat protection or to facilitate recovery of the fisher to a larger and more stable portion of its historic range on the West Coast. All of these factors indicate the fisher merits protection under CESA.

Zielinski et al. (2004a at p. 1403) state that "the gap in the fisher historical distribution aligns well with the area of greatest increase in human influence... In these areas, homes are built in fisher habitat, roads are more common, the forests around the built environment developments are managed to reduce forest density, and there is a long history of private land management for timber (compared with public land managed for multiple uses). These factors probably conspire to render home range areas less suitable, leading to the contraction of range in this area." Threats to the fisher are significant on both public and private lands, and the State of California can offer a legal safety net for the species. The California Department of Fish and Game is currently considering approving the reintroduction of fisher onto cutover, unsuitable timberlands owned by Sierra Pacific Industries in the northern Sierra Nevada. The California Department of Forestry and Fire Protection approves timber harvest plans in fisher habitat, which have been trending towards more clearcutting as a silvicultural method. The California Department of Transportation has jurisdiction over many of the roads threatening fishers, and other state agencies are responsible for approving developments on private lands in fisher habitat. CESA § 2053 states:

> "The Legislature further finds and declares that it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy. Furthermore, it is the policy of this state and the intent of the Legislature that reasonable and prudent alternatives shall be developed by the department, together with the project proponent and the state lead agency, consistent with conserving the species, while at the same time maintaining the project purpose to the greatest extent possible."

All state agencies, boards, and commissions have a mandatory, affirmative duty to conserve (meaning protect and recover) state-listed species and must "utilize their authority in furtherance of the purposes" of CESA. Fish and Game Code § 2055. Thus, the State of California is in a strong position to address the greatest threats to the survival and recovery of the Pacific fisher: private lands logging, road building, and urban development. The fisher is in dire need of the protective measures provided by CESA. Therefore, we request that the California Fish and Game Commission list the Pacific fisher as an endangered or threatened species in California, so that it can be given the opportunity to recover – and so that we can offer our grandchildren the opportunity to share in the wonder of this unique, elusive, and magnificent animal.

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Department of Fish and Wildlife

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Memorandum

Date: ~~April 21,~~ May, 13 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the June 10 - 11, 2015 Fish and Game Commission Meeting Initial Private Lands Wildlife Habitat Enhancement and Management (PLM) Area License**

The Department of Fish and Wildlife (Department) has reviewed the Initial Management Plan for 2 properties in 2 counties consisting of 112,523 acres. The Management plan for this property is in compliance with Commission policy requirements for private lands management. The applicant has identified the location where records will be kept and made available for inspection.

Public notices were published in local newspapers, and certified letters were mailed to adjacent landowners with notification of the applicant's intent to enter into the program. No letters of concern were received by the Department for the Big Lagoon PLM; however, we received one letter of concern for D Rafter L Ranch, LLC. The Central Regional Manager, Jeffrey Single, Ph.D. responded to the letter, both are attached.

Habitat improvements accomplished under this plan will enhance and maintain wildlife resources on and around the PLM area. The goals and objectives stated in the management plan are compatible with Department management plans for appropriate species in these areas. In addition, access to public lands will not be diminished under implementation of these management plans.

Post harvest game population surveys were completed on the PLM and surrounding area. Additionally, harvest on the PLM has been considered together with public harvest figures in preparing the hunting program on the PLM. Analysis of the survey data, harvest figures, and the proposed 2015 harvest numbers for the PLM area show no significant adverse effects on wildlife populations resulting from the recommended hunting program.

The Department recommends that the Commission approve the specified wildlife management plan, application, and the 2015 harvest program under conditions specified in the attached table.

If you have any questions, please contact Ms. Victoria Barr at (916) 445-4034 or by email at victoria.barr@wildlife.ca.gov.

Attachment

ec: Eric Loft, Ph.D., Chief
Wildlife Branch
eric.loft@wildlife.ca.gov

cc: Craig Stowers, Environmental Program Manager
Wildlife Branch
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Stuart Itoga, Senior Environmental Scientist
Wildlife Branch
stuart.itoga@wildlife.ca.gov

Victoria Barr, Environmental Scientist
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PLM AREA LICENSE INITIAL MANAGEMENT PLANS, 2015-2020 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
NORTHERN REGION		
BIG LAGOON PLM HUMBOLDT 109,367 ACRES	***Authorized Harvest:*** 3 bull elk • Issue 3 bull elk tags for the period of September 2, 2015 through September 13, 2015.	➢ Enhance coho salmon habitat by harvesting and delivering 35 merchantable trees ranging from 18 to 24 inches diameter at breast height to the restoration site on Little River. The trees will be used and installed as in-stream large, woody debris structures.
CENTRAL REGION		
D-RAFTER L RANCH, LLC. SAN LUIS OBOSPO 3,156 ACRES	***Authorized Harvest.*** 1 bull and 1 antlerless tule elk (An additional bull elk may be added in years 3-5 provided the ranch completes its work and the herd data support the increase) • Issue 1 bull elk tag for the period July 1, 2015 through December 31, 2015. • Issue 1 antlerless elk tag for the period August 15, 2015 through December 31, 2015.	➢ Construct 1 new water source/guzzler to provide more wildlife access to water. ➢ Create 2 new brush piles for use by wildlife. ➢ Add new brush to existing brush piles to enhance use by wildlife. ➢ Construct and install 2 wood duck nest boxes at each of the 8 ponds on the ranch. ➢ Plant 10 acres of pasture mix to supplement feed and cover for wildlife.

To:
California Department of Fish and Game
Attention Mr. Jeff Cann
20 Lower Ragsdale Drive, Suite 100
Monterey, CA 93940

RECEIVED

FEB 02 2015

DEPT OF FISH & GAME
MONTEREY OFFICE

From:
Ron and Patricia Rayborne
[redacted]

Dear Mr. Cann.

We recently received a letter stating that the property next to us, the Rafter L. Ranch, has applied to enter the CDFW Private Land Management Program, and that in exchange for certain, to be honest, small considerations (putting out some water, leaving brush piles and native plants), are asking to be allowed to host the sport hunting of elk on their property for six months each year (July – December).

We would like to state that we are opposed to this plan. Our property lies next to the ranch and we do not think that these magnificent animals should be treated as living bull's eyes for the enjoyment of the trigger-happy. People today do not *need* to kill elk to survive. We, my wife, I, and our young daughter have loved watching the small local elk herd graze in fields near our house, and listening to their shrill, melodic calls. They even occasionally bed down under a tall cottonwood tree not far from our fence. That would very likely end should you approve this plan, ironically characterized as "wildlife protection". Elk have families and lives of their own. They have the right to exist the same as us. What gives some the right to target them for sport *simply because they can*? Sadly, this is an era of extinction. We should be preserving these beautiful animals, the last vestiges of North American megafauna, not further eliminating them. We realize that this would sound silly to hardened hunters, but what if it were *they and their family being hunted for someone's enjoyment?* Then it would be outrageous!

Please understand, we don't write this letter lightly. Our issue is not with the ranch people, we do not wish to stand in their way of supplementing their alfalfa and vineyard income, nor to be unfriendly to them in any way. But we would be less than we are if we didn't speak up for those who cannot speak for themselves. Is there some other, less objectionable, consideration they can receive in exchange for having their land in this program?

I'd also like to say that we have lived here for over ten years and have only seen elk in the field near us and another field down the road, and once down Hwy 166. I know they are in other areas but I do not believe that their numbers are abundant enough to justify this kind of activity. I have hiked the local Los Padres and Santa Lucias for the last 24 years and have never seen them elsewhere. The other issue is the disruption to the peace six months of shooting guns would bring. Gunshot out here carries far and wide; we are in a bowl shaped valley that is surrounded by hills which hold in and amplify loud sounds. The other alternative, bow hunting, is just plain cruel.

We request that you please reject this proposal in its present form.

Thank you,
Ron and Patricia Rayborne

State of California – The Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4014
www.wildlife.ca.gov

EDMUND G. BROWN, Jr., Governor
CHARLTON H. BONHAM, Director

March 4, 2015

Mr. and Mrs. Rayborne
[redacted]

Subject: **Rafter L Ranch proposal to be included in the Private Lands Management Program in San Luis Obispo County**

Dear Mr. and Mrs. Rayborne:

Thank you for your comment letter about the proposal to include the Rafter L ranch in the Department of Fish and Wildlife's (CDFW) Private Lands Management Program (PLM), which has been in existence since 1979. More than a million acres of land on over 100 properties participate in this worthwhile program where landowners conduct positive management actions for wildlife on their properties. In return, they are granted hunting opportunities on their lands that may not otherwise be available. Usually this involves allowing an extended hunting season.

In order to qualify for these opportunities in the PLM program, the ranch has to develop a management plan that details the habitat, discusses management actions that will be carried out to benefit wildlife, and proposes a specific harvest level for a defined season. We have included information about the PLM program with this letter.

You mentioned in your letter that you were concerned that an unlimited number of elk would be allowed to be hunted for up to six months (July-December) on this proposed PLM each year. While you have defined the season correctly, it may not have been clear that the ranch will have a defined harvest limit for elk and whether they are harvested in one month or six, the limit will remain the same. All approved hunt dates and harvest levels will be detailed in the management plan and approved on an annual basis by the Fish and Game Commission. As you were notified, the authorized elk harvest on the proposed PLM is for two bull and one antlerless elk each year. However, initially the harvest level on the ranch would be one bull and one antlerless animal annually. This level could increase to their full authorized harvest (2 bull and 1 antlerless elk) as conditions allow.

The ranch is currently able to hunt elk as part of the existing La Panza hunt zone where licensed hunters participate in the state's annual big game drawing process. Landowners in this zone can also participate in a limited drawing to hunt for elk. The number of tags available in these two drawings for the whole La Panza zone far exceeds the harvest level proposed for the Rafter L ranch under the PLM program

If this ranch is accepted into the program, they will no longer be able to participate in the La Panza hunt drawings and will be only harvesting elk under limits established in the PLM program.

You may be unaware that San Luis Obispo County alone has a tule elk population in excess of 800 animals. In 1971, legislation (known as the Behr bill) passed which mandated that tule elk be protected until their numbers statewide exceeded 2,000 individuals. The legislation was drafted in response to depredation hunting of elk that were causing crop and fence damage in the southern Sierra. By 1987, this goal was achieved and today the state has an increasing tule elk population in excess of 4,300 animals in 22 herds. Subsequent legislation now allows for managed hunting of tule elk.

You also mentioned that "people today do not need to kill elk to survive". Although your statement is correct for most people, the fact remains that many people choose to hunt for the meat they eat because it is as natural and organic as meat can get. We agree that elk are wonderful animals to observe in their natural environment and people all over the state list wildlife watching as their favorite pastime. This PLM has been drafted in consultation with CDFW Biologists who help define conservative hunting limits that will allow hunters and other wildlife enthusiasts to utilize the elk resource for years to come.

Thank you for your concern and interest in the proposal to add the Rafter L to the PLM program. Should you have further questions about the PLM program please call my staff members, Jeff Cann, Environmental Scientist (831) 649-7194 or Rocky Thompson, Senior Environmental Scientist (805) 594-6175.

Thank you,

Jeffrey R. Single, Ph.D.
Regional Manager

ec: Palmisano, Thompson, Stafford, Cann, Victoria Barr, Joe Hobbs

Private Lands Management

Loss of habitat is the single most important challenge facing wildlife populations and wildlife managers today. In response to this problem, the California Department of Fish and Wildlife created the Private Lands Management (PLM) Program, which offers landowners incentives to manage their lands for the benefit of wildlife. This increases benefits to a landowner while preventing the conversion of private lands to land uses that are not compatible with wildlife, such as urban development, grazing and logging. Landowners who enroll in this "ranching for wildlife" program consult with biologists to make biologically sound habitat improvements that benefit wildlife, like providing water sources, planting native plants for food, and making brush piles for cover. In return for these habitat improvements, landowners can charge fees for wildlife viewing, hunting and fishing. This partnership between wildlife managers and private landowners helps conserve and maintain wildlife habitat in our state.

Facts about the PLM Program:

- There are currently 101 PLM properties.
- The program encompasses over 1,003,627 acres of wildlife habitat.
- California has about 101 million acres of land, about half of which is privately owned.
- The largest PLM property is 270,000 acres; the smallest property is 400 acres.
- The average PLM size is about 9,936 acres; half have fewer than 5,000 acres.
- Many wildlife species benefit, including deer, elk, pronghorn antelope, wild turkeys, quail, waterfowl, as well as threatened and endangered species like the bald eagle and red-legged frog.
- The program began in 1979 as a three-year pilot program with five ranches in five counties. In 1983, the California Legislature voted to make it a long-term program.
- Participation in the program requires the submission and acceptance of a sound management plan. PLM areas are licensed for five-year periods; annual reviews ensure that agreed-upon habitat improvements have been made.
- Many PLM properties offer expanded hunting season dates and/or bag limits.

- Wildlife do not recognize property boundaries between public and private lands, so improvements to a PLM property can benefit adjacent public land as well.

Additional information about the Private Lands Management program may be found at http://www.dfg.ca.gov/wildlife/hunting/plm.html.

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2015 MAY 13 PM 1:34

State of California
Department of Fish and Wildlife

Memorandum

Date: ~~April 17,~~ May 13, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the June 10 - 11, 2015 Fish and Game Commission Meeting Annual Private Lands Wildlife Habitat Enhancement and Management (PLM) Area License**

The Department of Fish and Wildlife (Department) has reviewed the annual reports and annual renewal applications for 35 properties in 16 counties consisting of 590,000+ acres.

These PLM areas were previously licensed under Commission regulations under Section 601, Title 14, California Code of Regulations. Full payment was made for all tags used in 2014, and all habitat work was completed.

The Morisoli Ranch no longer wishes to have Camp 5 Outfitters as their PLM operator and has rewritten their management plan to remove Camp 5 Outfitters from the responsibility for carrying out management activities in the PLM. A new application has been prepared with Morisoli Ranch as owner and operator. The Department supports this change.

The Department recommends that the Commission approve the 2015/16 harvest programs under conditions specified in the attached table.

If you have any questions, please contact Ms. Victoria Barr at (916) 445-4034 or by email at victoria.barr@wildlife.ca.gov.

Attachment

ec: The Department of Fish and Wildlife

Eric Loft, Ph.D., Chief
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PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
NORTHERN REGION		
3D RANCH DEER ZONE B5 TEHAMA 1,732 ACRES	***Authorized Harvest:*** 7 buck deer forked horn or better and 5 bear • Issue 7 buck deer tags for the period of August 15, 2015 through November 30, 2015. • No more than 4 buck deer may be harvested after October 25, 2015. • Issue 5 bear tags for the period of August 15, 2015 through December 27, 2015 or when the Department determines that 1,700 bears have been harvested.	➢ Mechanically treat at least 15 acres of decadent brush to improve forage for wildlife. ➢ Maintain a total of 7 acres of forage plots planted with legumes and clover. ➢ Maintain 4 water sources to provide water for wildlife. ➢ Provide at least 500 pounds of mineral supplements containing selenium to improve wildlife health. ➢ Remove at least ¼ mile of unnecessary interior fencing to prevent wildlife entanglement.
ASH VALLEY RANCH DEER ZONE X3A LASSEN 8,736 ACRES	***Authorized Harvest:*** 4 buck deer forked horn or better and 1 pronghorn antelope • Issue 4 buck deer tags for the period August 15, 2015 through November 30, 2015. • Issue 1 buck pronghorn antelope tag for the period of August 1, 2015 through September 30, 2015.	➢ Remove approximately 25 acres of conifers that are encroaching upon an aspen grove. ➢ Remove approximately 2-5 acres of noxious weeds by grubbing and/or chemical application. ➢ Maintain previously completed habitat restoration work through adaptive range management grazing prescriptions.
BLACK RANCH SHASTA DEER ZONE C3 1,000 ACRES	***Authorized Harvest:*** 1 bull elk, 1 antlerless elk, 2 buck deer forked horn or better, and 2 antlerless deer • Issue 1 bull elk tag and 1 antlerless elk tag for the period of October 1, 2015 through November 30, 2015. • Issue 2 buck deer tags and 2 antlerless deer tags for the period of October 1, 2015 through November 30, 2015.	➢ Begin work on the 145-acre riparian restoration project on Burney Creek by removing a portion of the berm along the west bank of the creek to allow water to flow into the flood plain during high flow. ➢ Restrict livestock grazing to 5 acres on the entire ranch to benefit wildlife. ➢ Maintain the small aspen patch along Burney Creek by monitoring growth and replanting as necessary. ➢ Maintain previously planted willows and aspens along riparian area of Burney Creek. ➢ Remove at least 600 feet of unnecessary fencing to prevent wildlife entanglement. ➢ Maintain 30 wood duck nest boxes and 6 goose nesting platforms. ➢ Maintain 4 existing owl and 7 existing bat boxes.
CORNING LAND AND	***Authorized Harvest***: 7 buck deer forked horn or	➢ Retain 8 irrigated forage plots, totaling 20

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
CATTLE CO. DEER ZONE B5 TEHAMA 6,200 ACRES	better, 3 antlerless deer and 300 quail • Issue 7 buck deer tags for the period of August 8, 2015 through November 30, 2015. • Issue 3 antlerless deer tags for the period of October 17, 2015 through November 15, 2015. • Issue 300 quail seals for the period of September 1, 2015, through February 28, 2016.	acres planted in grain/vetch/forb combination for use by wildlife. ➢ Continue reduced livestock numbers at 150 and deferred grazing from December 1 through May 1. ➢ Develop a 1 acre irrigated forage plot of alfalfa in an area that lacks green forage for use by wildlife. ➢ Plant 7 acres of milo and lab-lab for use by wildlife. ➢ Retain approximately 2 miles of riparian areas for wildlife forage and cover by not removing vegetation. ➢ Mechanically treat at least 20 acres of decadent brush to improve wildlife forage.
COTTRELL RANCH DEER ZONE B1 HUMBOLDT 6,500 ACRES	***Authorized Harvest:*** 15 deer of which no more than 10 may be antlerless deer, 1 bull elk, and 1 antlerless elk • Issue 15 either-sex deer tags for the period of July 15, 2015 through December 15, 2015. • No antlerless deer shall be harvested before September 15, 2015. • No more than 7 buck deer may be harvested after October 25, 2015. • Bucks must be forked horn or better. • Issue 1 bull elk tag for the period of August 1, 2015 through December 15, 2015. • Bull elk must be a spike. • Issue 1 antlerless elk tag for the period of September 15, 2015 through December 15, 2015.	➢ Remove at least 40 acres of conifers which are encroaching into oak woodlands in sections 25, 28, 29, 30, 31, 32, 33, or 36.
DIXIE VALLEY RANCH	***Authorized Harvest:*** 3 buck deer forked horn or better	➢ Remove 3 acres of junipers from around one spring to increase shrub recruitment and increase water flow.

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
DEER ZONE X3A LASSEN 12,500 ACRES	• Issue 3 buck deer tags to take forked horn or better buck deer for the period of August 1, 2015 through November 30, 2015. • No person shall take more than one buck deer annually in the X zones.	➢ Remove ½ mile of unnecessary fencing to prevent wildlife entanglement. ➢ Install 5 goose nesting platforms and check for use annually. ➢ Install 5 wildlife nesting boxes and check for use annually. ➢ Remove encroaching conifers from a 2 acre aspen stand. ➢ Maintain existing water sources.
EL RANCHO RIO FRIO DEER ZONE B5 TEHAMA 8,000 ACRES	***Authorized Harvest:*** 22 buck deer forked horn or better • Issue 22 buck deer tags to take forked horn or better buck deer for the period of August 15, 2015 through November 30, 2015. • No more than 13 buck deer may be harvested after October 25, 2015.	➢ Burn at least 300 acres of decadent brush to improve wildlife forage. ➢ Provide 500 lbs. of mineral supplements containing selenium at 10 sites to improve wildlife health. ➢ Replant a 3 acre forage plot with legumes for wildlife.
FIVE DOT RANCH - AVILA DEER ZONE X3A LASSEN 11,000 ACRES	***Authorized Harvest***: 6 buck deer forked horn or better and 1 buck pronghorn antelope • Issue 12 buck deer tags to take 6 forked horn or better buck deer for the period of September 19, 2015 through November 30, 2015. • No person shall take more than one buck deer annually in the X zones. • In no case shall the number of tags issued be used to exceed the authorized harvest. • Issue 1 buck pronghorn antelope tag for the period August 8, 2015 through September 20, 2015.	➢ Continue reduced livestock use at 450 head from approximately 1,000 head. ➢ Remove conifers out of 7 aspen enclosures to rejuvenate aspen stands. ➢ Maintain 7 livestock exclosures to protect deer fawning areas. ➢ Provide mineral supplements containing selenium at 20 sites to improve wildlife health. ➢ Maintain 6 nesting platforms for Canada geese at 4 reservoirs. ➢ Cut and disperse 100 mountain mahogany limbs to spread seed to new areas to recruit young plants. ➢ Maintain all existing springs and reservoirs.
FOUR PINES RANCH DEER ZONE B5 MENDOCINO	***Authorized Harvest:*** 12 buck deer forked horn or better and 4 antlerless deer • Issue 12 buck deer tags to take forked horn or better buck deer and 4 antlerless deer tags for the period of July 16, 2015 through	➢ Maintain 5 previously improved springs and 2 existing ponds. ➢ Develop 1 spring in sections 1, 7, 11, 12, or 13. ➢ Plant ¼ acre forage plot in sections 1, 7, 11, 12, or 13 with legumes and vetch for

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
2,001 ACRES	November 30, 2015. • No more than 6 buck deer may be harvested after October 25, 2015. • No antlerless deer shall be harvested before September 15, 2015.	wildlife use. ➢ Treat ½ acre of invasive weeds in sections 1, 7, 11, 12, or 13, by hand manipulation or herbicides, to allow native vegetation to grow. ➢ Remove 100 feet of interior fence to enhance wildlife passage in sections 1, 7, 11, 12, or 13. ➢ Create ¼ acre browse opening through dense brush in sections 1, 7, 11, 12, or 13 to enhance wildlife access to forage. ➢ Remove encroaching conifers in ¼ acre of oak woodlands in sections 1, 7, 11, 12, or 13. ➢ Provide 150 pounds of mineral supplements containing selenium at 3 sites to improve wildlife health. ➢ Restrict livestock grazing to no more than 50 head during the winter and spring. ➢ Plant 50 willow shoots at existing water sources; improve existing willow patches by trimming to encourage growth. ➢ Create at least 3 new brush piles annually for wildlife cover.
HUNTER RANCH DEER ZONE B1 HUMBOLDT 16,103 ACRES HUNTER RANCH CONT.	***Authorized Harvest:*** 20 deer of which no more than 5 may be antlerless deer and 1 bull elk • Issue 20 either-sex deer tags for the period of August 1, 2015 through November 30, 2015. • No antlerless deer shall be harvested before September 15, 2015. • Buck deer must be forked horn or better. • No more than 7 buck deer may be harvested after October 25, 2015. • Issue 1 bull elk tag for the period September 1, 2015 through September 30, 2015.	➢ Remove at least 40 acres of conifers which are encroaching into oak woodlands.
JERUSALEM CREEK RANCH DEER ZONE B5	***Authorized Harvest:*** 3 buck deer forked horn or better • Issue 5 buck deer tags to take 3 forked horn or better buck deer for the period of August	➢ Mechanically treat at least 15 acres of decadent brush to improve forage for wildlife. ➢ Maintain 2 springs to provide a water source for wildlife.

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
SHASTA 726 ACRES	1, 2015 through November 30, 2015. • In no case shall the number of tags issued be used to exceed the authorized harvest.	➢ Thin 5 acres of dense brush in the Northern Montane Hardwood Unit. Pile and burn a minimum of 5 acres after treatment is complete. ➢ Provide 3 mineral supplement stations that include selenium. ➢ Plant at least 5 acres with a grass/vetch seed mix after burning is complete.
PEPPERWOOD SPRINGS RANCH DEER ZONE B1 HUMBOLDT 22,000 ACRES	***Authorized Harvest:*** 30 buck deer forked horn or better • Issue 30 buck deer tags to take forked horn or better buck deer for the period of July 15, 2015 through November 30, 2015. • No more than 15 buck deer may be harvested after October 25, 2015.	➢ Remove at least 40 acres of conifer which are encroaching into oak woodlands.
REDWOOD HOUSE RANCH DEER ZONE B1 HUMBOLDT 8,419 ACRES	***Authorized Harvest***: 20 buck deer forked horn or better and 1 bull elk • Issue 20 buck deer tags to take forked horn or better buck deer for the period of August 15, 2015 through November 30, 2015. • No more than 7 buck deer may be harvested after October 25, 2015. • Issue 1 bull elk tag for the period of September 19, 2015 through October 10, 2015.	➢ Remove at least 40 acres of conifer which are encroaching into oak woodlands.
SCHNEIDER RANCH DEER ZONE B1 MENDOCINO 4,222 ACRES	***Authorized Harvest***: 9 buck deer forked horn or better • Issue 9 buck deer tags to take forked horn or better buck deer for the period of August 1, 2015 through November 30, 2015. • No more than 4 buck deer may be harvested after October 25, 2015.	➢ Maintain the 1 acre irrigated forage plot at Marks Place and at the Cabin food plots. ➢ Create 6 brush piles for wildlife cover and burn 6 old brush piles for nutrient recycling. ➢ Inspect 8 previously improved springs and repair any damaged parts. ➢ Develop 1 spring in section 1, 2, 3, 6, 11, 12, 13, 18 27, 34, 35, or 36. ➢ Provide 450 pounds of mineral supplements containing selenium at 9 sites to improve wildlife health.

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
SL RANCH DEER ZONE X3A MODOC 7,500 ACRES	***Authorized Harvest:*** 4 buck deer forked horn or better and 1 buck pronghorn antelope • Issue 4 buck deer tags to take forked horn or better buck deer for the period of August 15, 2015 through November 15, 2015. • Issue 1 buck pronghorn antelope tag for the period of August 1, 2015 through September 30, 2015. • No person shall take more than 1 buck deer annually in the X zones.	➢ Remove at least 5 acres of western juniper trees from the west side of the ranch, and treat another 5 acres of young trees using herbicide. ➢ Plant at least 200 willow shoots along the north and south banks of the Westside Irrigation Canal. ➢ Retain 400 acres of wild rice for waterfowl use by flooding after harvest. ➢ Maintain the livestock exclusion fence around the spring below Likely Mill. ➢ Maintain 2 springs on Rocky Prairie and 1 pond. ➢ Maintain the livestock exclusion fencing along the West Side Canal where willows are present. ➢ Maintain 15 goose nesting platforms. ➢ Plant and not harvest a 3 acre grain plot on the east side of the river for wildlife forage.
SMITH RIVER PLM HUMBOLDT 24,949 ACRES	***Authorized Harvest:*** 3 bull elk and 6 antlerless elk • Issue 3 bull elk tags for the period of September 1, 2015 through November 1, 2015. • Issue 6 antlerless elk tags for the period of October 1, 2015 through November 1, 2015.	➢ Enhance coho salmon habitat by harvesting and delivering 25 large, merchantable trees to the restoration site on Rowdy Creek. The trees will be used and installed as in-stream large, woody debris structures.
STOVER RANCH HUMBOLDT 7,000 ACRES	***Authorized Harvest:*** 4 bull elk and 2 antlerless elk • Issue 4 bull elk tags for the period of September 1, 2015 through November 1, 2015. • Issue 2 antlerless elk tags for the period of October 1, 2015 through November 1, 2015.	➢ Remove encroaching conifers from at least 80 acres of oak woodlands.
TRAVIS RANCH	***Authorized Harvest:*** 15 deer of which no more than 5 may be antlerless deer	➢ Remove encroaching conifers from at least 20 acres of oak woodland in Area D.

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
DEER ZONE B1 TRINITY 11,907 ACRES	• Issue 15 either-sex deer tags for the period of July 15, 2015 through November 30, 2015. • Buck deer must be forked horn or better. • No antlerless deer shall be harvested before September 15, 2015. • No more than 7 buck deer may be harvested after October 25, 2015.	➢ Retain at least 5 slash piles for use as wildlife cover. ➢ Treat at least 70 acres of yellow star thistle with herbicide and biological controls in Areas K and L.
TRIPLE B RANCH DEER ZONE C3 SHASTA 600 ACRES	***Authorized Harvest:*** 3 buck deer forked horn or better • Issue 3 buck deer tags to take forked horn or better buck deer for the period of August 1, 2015 through November 30, 2015.	➢ Maintain 9 ponds and 1 spring for wildlife. Pump water into 2 of the ponds during the summer, if needed. ➢ Maintain 20 artificial cavity nesting structures for wildlife and document use annually. ➢ Reduced livestock grazing to 150 AUMs during the winter grazing period (December through April), and exclude cattle grazing during the summer (June through November). ➢ Prohibit commercial firewood cutting on the property to retain the oaks for wildlife. ➢ Establish a 3 acre forage plot and plant with a grain mix for wildlife use.
WIGGINS RANCH HUMBOLDT 16,657 ACRES	***Authorized Harvest:*** 2 bull elk and 2 antlerless elk • Issue 2 bull elk tags for the period of September 1, 2015 through November 1, 2015. • Issue 2 antlerless elk tags for the period of October 1, 2015 through November 1, 2015.	➢ Remove at least 40 acres of conifers which are encroaching into oak woodlands.
BAY DELTA REGION		
BUCKEYE RANCH	***Authorized Harvest***: 12 bucks and 4 antlerless deer	➢ Install one wildlife guzzler. ➢ Inspect and maintain onsite wildlife water sites two times per year.

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
DEER ZONE A SOLANO 3,000+ ACRES	• Issue 12 buck deer tags to take forked horn or better bucks for the period of July 11, 2015 to November 30, 2015. • No more than 4 buck may be taken after the close of A Zone deer rifle hunt. • Issue 4 antlerless deer tags for the period of July 11, 2015 to November 30, 2015.	➢ High-blade three to four acres of chamise-chaparral before July 15, 2015. ➢ Construct three piles of chamise-chaparral or other woody vegetation for bird nesting habitat. Piles should measure at least 15'x 15' wide x 4' tall. ➢ Disk and plant four one-acre wildlife habitat plots. The planting mix should contain a mixture of forbs such as clover. NOTE: safflower requires reliable water throughout the growing season; consider drought tolerant alfalfa.
CONNOLLY AND CORRAL HOLLOW RANCH SAN JOAQUIN 11,758 ACRES	***Authorized Harvest:*** 1 bull elk and 1 antlerless elk • Issue 1 bull elk tag for the periods of August 1, 2015 through October 1, 2015 and November 15, 2015 through December 15, 2015. • Issue 1 antlerless elk tags for the periods of August 15, 2015 through October 1, 2015 and November 15, 2015 through December 15, 2015.	➢ Provide 800 acres of grasslands on the Connolly ranch for exclusive use by elk from July through March. ➢ Provide 480 acres of grasslands on the Corral Hollow ranch for exclusive use by elk. ➢ Continue to implement a rotational cattle grazing regime to provide adequate forage for elk. ➢ Fell 3 acres of gray pines to provide additional forage for elk and to increase cover for small mammals, birds and reptiles.
COON CREEK RANCH DEER ZONE A SANTA CLARA 1650 ACRES	***Authorized Harvest***: 8 buck deer • Issue 8 buck deer tags to take forked horn or better bucks for the period of July 11, 2015 through November 30, 2015.	➢ Brush approximately 30 new acres of chaparral. ➢ Plant seed/cover crops on small areas for quail and other wildlife. ➢ Develop two springs. ➢ Limited cattle grazing to 80 acres of ranch.
CENTRAL REGION		
AVENALES RANCH SAN LUIS OBISPO	***Authorized Harvest:*** 3 bull elk • Issue 3 bull elk tags for the period of July 15, 2015 through December 31, 2015.	➢ Fence off Surprise Spring to protect it as a source of year around water for wildlife and add 4 brush piles for upland wildlife cover. ➢ Clean and replace dove nest cones installed in 2012 in Douglas Canyon.

PLM AREA LICENSE ***ANNUAL RENEWALS, 2015/2016*** ***PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS***		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
11,300 ACRES		➢ Rehabilitate spring at Rock corrals and add 4 brush piles for upland wildlife cover. ➢ Install new ground level water trough at front of ranch. ➢ Install trail cameras on 15 wildlife project sites to monitor their use. ➢ Maintain, repair, and upgrade wildlife project sites from 2010.
CARRIZO RANCH SAN LUIS OBISPO 11,040 ACRES	***Authorized Harvest:*** 3 bull elk and 4 antlerless elk • Issue up to 3 bull elk tags for the period of July 15, 2015 through December 31, 2015. • Issue up to 4 antlerless elk tags for the period of August 15, 2015 through December 31, 2015.	➢ Build livestock exclusion fence around Chair Spring to enhance habitat for wildlife. ➢ Plant 5 one gallon trees and 5 one gallon shrubs around Chair Spring enclosure to enhance wildlife habitat. ➢ Install new wildlife watering trough.
CHIMNEY ROCK RANCH DEER ZONE A SAN LUIS OBISPO 6,500 ACRES	***Authorized Harvest:*** 2 bull elk, 2 antlerless elk and 10 forked horn or better buck deer • Issue 2 bull elk tags for the period July 1, 2015 through December 31, 2015**.** • Issue 2 antlerless elk tags for the period August 15, 2015 through December 31, 2015. • Issue 16 buck deer tags to take no more than 10 forked horn or better buck deer for the period July 11, 2015 through November 30, 2015. • At the request of the licensee on or before October 26th, the licensee may request an addition of 4 tags to accomplish the authorized harvest**.**	➢ Construct 10 brush piles for use as cover for wildlife. ➢ Install solar pump and panel in the Triangle pasture to provide water for wildlife. ➢ Clean out spring box at Mud Spring to provide water for wildlife. ➢ Install new tank and trough in the Mud Spring area to provide water for wildlife. ➢ Maintain existing water sources to provide water for wildlife.
HEARST RANCH SAN LUIS OBISPO 5,381 ACRES	***Authorized Harvest:*** 3 bull elk and 6 antlerless elk • Issue 3 bull elk tags for the period of July 15, 2015 through December 31, 2015.	➢ Irrigate 152 acres of pasture for year round use by wildlife. ➢ Install livestock exclusionary fencing on 2.5 miles of riparian pasture during periods of stream flow to enhance fishery and wildlife

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
	• Issue 6 antlerless elk tags for the period of August 15, 2015 through December 31, 2015.	habitat. ➢ Treat and remove 1 acre of nonnative Scotch Broom to enhance habitat for native plants and animals. ➢ Treat and remove 1 acre of nonnative Jubata grass to enhance habitat for native plants and animals. ➢ Install 500 feet of wildlife friendly fencing around the Arroyo Del La Cruz riparian area. ➢ Remove old fencing at Arroyo Del Oso to prevent wildlife entrapment.
INDIAN VALLEY CATTLE COMPANY, (LOMBARDO RANCH) DEER ZONE A MONTEREY 12,500 ACRES	***Authorized Harvest***: 3 bull elk, 2 antlerless elk and 4 buck deer • Issue 3 bull elk tags for the period of July 15, 2015 through December 31, 2015. • Issue 2 antlerless elk tags for the period of August 15, 2015 through December 31, 2015. • Issue 4 buck deer tags to take forked horn or better bucks for the period of July 2, 2015 through November 30, 2015.	➢ Construct 6 brush piles for use by wildlife. ➢ Maintain cattle stocking rate at 300 animals on 12,500 acres to maintain high quality habitats for wildlife. ➢ Plant 350 acres of barley for use by wildlife. ➢ Employ a rotational grazing regime to maintain high quality habitats for wildlife. ➢ Install 1 wildlife accessible water trough to provide water for wildlife. ➢ Provide 300 acres of ungrazed area in Big Sandy Creek to maintain high quality habitats for wildlife. ➢ Allow volunteer barley to remain available through the summer for exclusive use by wildlife.
MORISOLI RANCH MONTEREY AND SAN BENITO 14,700 ACRES	***Authorized Harvest***: 3 bull elk and 3 antlerless elk • Issue 3 bull elk tags for the period of July 2, 2015 through December 31, 2015. • Issue 3 antlerless elk tags for the period of August 15, 2015 through December 31, 2015.	➢ Build one elk crossing. ➢ Construct 5 brush piles for use by wildlife. ➢ Construct one guzzler to provide a back country water source. ➢ Build and install one bird nest box. ➢ Plant 10 acres of forage mix for use by wildlife. ➢ Clear 5 acres of old growth brush to stimulate new forage growth for use by wildlife. ➢ Seed cleared areas with barley/vetch mixture to provide additional forage for wildlife.

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
RANCHO LA CUESTA DEER ZONE A SAN BENITO 4,000 ACRES	***Authorized Harvest***: 3 bull elk, 1 antlerless elk and 2 buck deer • Issue 4 bull elk tags to take no more than 3 bull elk for the period of July 15, 2015 through December 31, 2015. • Issue 1 antlerless elk tag for the period of August 15, 2015 through December 31, 2015. • Issue 2 buck deer tags to take forked horn or better bucks for the period of July 15, 2015 through November 30, 2015.	➢ Plant 5 acres of grasses and legumes to provide high quality food for elk and deer. ➢ Clean out and maintain water points on the ranch to provide water for wildlife. ➢ Maintain a 2,530 acre cattle-free refuge on the upper portion of the ranch for exclusive use by wildlife. ➢ Mechanically manipulate 5 acres of decadent chaparral to stimulate growth of quality browse for wildlife. ➢ Build 5 brush piles for use by wildlife.
TEJON RANCH KERN AND LOS ANGELES DEER ZONE D10 270,000 ACRES	***Authorized Harvest***: 150 buck deer, 20 antlerless deer, 12 bull elk, 3 cow elk, 50 bearded turkeys, 0 pronghorn antelope buck tags • Issue 150 either-sex deer tags, including 100 tags for the period of September 26, 2015 through November 8, 2015 (regular season) and 50 tags for the period of September 26, 2015 through December 6, 2015 (extended season). Harvest quota shall be 75 deer during the regular season. Harvest quota shall be 50 deer during the extended season. • Issue 20 antlerless deer tags for the period of September 26, 2015 through December 31, 2015. Harvest quota of 20 antlerless deer. • Issue 12 bull elk tags and 3 antlerless elk tags for the period of September 1, 2015 through December 31, 2015. • No persons shall take more than 1 buck deer, 1 bull elk and 1 antlerless elk. • Issue 50 bearded turkey tags for the period of March 19, 2016 through May 22, 2016.	➢ Maintenance of 200+ water troughs and wildlife guzzlers. ➢ Instillation of wildlife escape ramps in livestock water troughs. ➢ Completed netting all open water tanks and large spring containments. ➢ Completed 11 mile water pipeline system, from White Wolf to Comanche Point. ➢ Completed fencing 40 acres to exclude cattle grazing (Sacatara Canyon), for riparian habitat protection. ➢ Residual Dry Matter (RDM) monitoring of cattle grazing locations for elk. ➢ Maintain wildlife corridor between Big Sycamore and Bronco Canyon. ➢ Modified pasture fences (Antelope Valley) for pronghorn movement; replaced with smooth wire where needed or required. ➢ Implement comprehensive invasive plant control plan in collaboration with the Tejon Conservancy. ➢ Implement Tamarisk removal project and riparian fencing installation. ➢ Expand hunting and increase harvest of feral pigs to reduce damages to native habitat; develop a feral pig management study.
TEJON RANCH CONT.	• No (0) pronghorn antelope tags shall be	➢ Utilize Quality Deer Management (QDM)

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
	issued for the period of September 1, 2015 through December 31, 2015.	program methods to better manage population. ➢ Expanded data collection for all species; Enhanced deer composition methodology using modified management units.
TEMBLOR RANCH SAN LUIS OBISPO AND KERN 30,000 ACRES	***Authorized Harvest***: 7 bull elk; 12 antlerless elk • Issue 7 bull elk tags for the period of July 15, 2015 through December 31, 2015. • Issue 12 antlerless elk tags for the period of August 15, 2015 through December 31, 2015. • Upon request of the licensee on or prior to November 1, 2015, the licensee may request up to 7 additional bull elk tags and 12 additional antlerless elk tags to accomplish the authorized harvest of not more than 19 elk.	➢ Plant 100 acres of barley at 100 lbs/acre for elk and pronghorn. ➢ Plant 10 one gallon trees for wildlife. ➢ Plant 1 acre of irrigated pasture for wildlife.
TRINCHERO RANCH SAN BENITO 4,452 ACRES	***Authorized Harvest***: 2 bull elk • Issue 2 bull elk tags for the period of July 15, 2015 through December 31, 2015.	• Limited cattle grazing on approximately 4,000 acres in Black and Red Mountain pastures from December through May to remove or reduce thatch layer on bunch grasses and stimulate new growth. • Control invasive Tamarisk at the ranch entrance. • Construct 4-6 brush piles for use by wildlife. • Install wildlife escape ramp in Upper Springs water trough. • Install one elk crossing in upper boundary fence.

PLM AREA LICENSE ANNUAL RENEWALS, 2015/2016 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
WORK RANCH DEER ZONE A MONTEREY 19,500 ACRES	***Authorized Harvest***: 2 bull elk, 4 antlerless elk, 6 buck deer, and 2 antlerless deer • Issue 2 bull elk tags for the period of July 2, 2015 through December 31, 2015. • Issue 3 either-sex deer tags and 5 buck deer tags to take no more than 6 forked horn or better bucks and 2 antlerless deer for the period of July 2, 2015 through November 30, 2015.	• Continue to practice holistic range management to maintain high quality habitats for wildlife. • Maintain all existing water points for use by wildlife. • Provide 300 acres of barley/wheat for use by wildlife. • Rehabilitate Duncan Canyon guzzler. • Construct 10 brush piles to provide cover for wildlife.
INLAND DESERTS REGION		
BIG MORONGO SPRINGS RANCH DEER ZONE D14 SAN BERNARDINO 6,632 ACRES	***Authorized Harvest*:** 10 buck deer, 2 antlerless deer, and 10 black bear • Issue 10 deer tags to take forked-horn or better bucks and 2 antlerless tags to take antlerless deer for the period of September 12, 2015 through December 6, 2015. • Issue 10 tags to take black bear for the period of September 12, 2015 through December 27, 2015 or when the statewide quota of 1,700 is met.	➢ Continue non-use by livestock. ➢ Repair or replace all pipelines and tanks damaged by Sawtooth wildfire. ➢ Repair fire-damaged roads within PLM. ➢ Continue monitoring of water sources with trail cameras.

State of California
Department of Fish and Wildlife

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COMMISSION

2015 MAY 13 PM 1:34

Memorandum

Date: ~~April 21,~~ May 13, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the June 10 - 11, 2015 Fish and Game Commission Meeting 5-year Private Lands Wildlife Habitat Enhancement and Management (PLM) Area License**

The Department of Fish and Wildlife (Department) has reviewed the 5-year management plans and renewal applications for 12 properties in 7 counties consisting of 82,355 acres.

The new 5-year management plans for these areas are in compliance with Commission policy requirements for private lands management. The applicants have identified the location where records will be kept and made available for inspection. Habitat improvements accomplished under these plans will enhance and maintain wildlife resources on and around the PLM areas. The goals and objectives stated in the management plans are compatible with Department management plans for appropriate species in these areas. In addition, access to public lands will not be diminished under implementation of these management plans.

The Department recommends that the Commission approve the specified wildlife management plans, applications, and the 2015 harvest programs under the conditions specified in the attached table.

If you have any questions, please contact Ms. Victoria Barr at (916) 445-4034 or by email at victoria.barr@wildlife.ca.gov.

Attachment

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PLM AREA LICENSE ***NEW 5-YEAR MANAGEMENT PLANS, 2015-2020*** ***PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS***		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
NORTHERN REGION		
BIG BLUFF RANCH DEER ZONE B5 TEHAMA 3,736 ACRES	***Authorized Harvest:*** 9 deer of which no more than 5 may be forked horn or better buck deer and 4 may be antlerless deer • Issue 9 either-sex deer tags for the period of August 15, 2015 through November 30, 2015. • No antlerless deer shall be harvested before September 15, 2015.	➢ Maintain the Red Bank Restoration Project which restored the riparian corridor on 3 miles of the creek by installing livestock control fencing, and re-vegetating 6 blocks totaling 30 acres to native vegetation. ➢ Mechanically treat at least 20 acres of decadent brush to improve wildlife forage. ➢ Maintain the water development at Miller Place as needed to provide water for wildlife. ➢ Irrigate 35 acres of permanent pasture for wildlife use. ➢ Maintain the fence below Sunflower Dam to control livestock and allow wildlife access to wetlands. ➢ Maintain a 500 gallon water trough and 3,000 gallon storage tank as needed to provide water for livestock and wildlife away from riparian areas. ➢ Continue to participate in the Sunflower Conservation Resource Management Plan which is creating additional wildlife habitat on the surrounding 40,000 acres.
BURROWS RANCH DEER ZONE B5 TEHAMA 3,500 ACRES	***Authorized Harvest:*** 18 deer of which no more than 13 may be forked horn or better buck deer and 5 may be antlerless deer • Issue 18 either-sex tags for the period of August 15, 2015 through November 30, 2015. • No more than 9 buck deer may be harvested after October 25, 2015.	➢ Remove livestock from and delay haying an 18-acre cereal grains field until after reproduction season to increase fawn survival, waterfowl and turkey nesting. ➢ Use low wildlife impact electric fence to control livestock grazing. Modifications may be made to limit wild pig access to grain fields. ➢ Burn at least 50 acres of decadent brush to rejuvenate shrubs for wildlife forage. If burn does not occur, then 20 acres of decadent brush will be mechanically crushed. ➢ Maintain 10 acres of dryland alfalfa, 35 acres of cereal grain, and 15 acres of safflower for wildlife. ➢ Plant at least 15 acres of safflower for wildlife forage. ➢ Plant 18 acres of cereal grains. ➢ Inspect 24 waterfowl nesting structures, replace nesting material, and check for use.

PLM AREA LICENSE ***NEW 5-YEAR MANAGEMENT PLANS, 2015-2020*** ***PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS***		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
BURROWS RANCH CONT.		➢ Maintain livestock exclosures on 6 reservoirs. ➢ Reduce irrigation water use as needed to maintain 11 small ponds for waterfowl. ➢ Continue Holistic Management practices to improve overall health of the area. ➢ Continue involvement in the Sunflower CRMP to benefit 40,000 acres of habitat.
FIVE DOT RANCH - HORSE LAKE DEER ZONE X5A LASSEN 8,025 ACRES	***Authorized Harvest:*** 1 buck deer forked horn or better and 1 buck pronghorn antelope • Issue 1 buck deer tag for the period of September 19, 2015 through November 30, 2015. • Issue 1 buck pronghorn antelope tag for the period of August 8, 2015 through September 20, 2015. • No person shall take more than 1 buck deer annually in the X zones.	➢ Rehabilitate a spring and riparian vegetation on 20 acres by excluding cattle, installing a water storage tank and troughs, and clear 80 acres of juniper surrounding the spring. ➢ Livestock grazing of the Coon Camp Field shall not exceed 100 head for 6 days to retain forage and cover for wildlife. ➢ Maintain 5 goose nesting platforms at Packard Reservoir and Coon Camp Reservoir as needed. ➢ Defer livestock grazing in the 300-acre Packard Field until after July 15 to enhance duck nest survival. ➢ Maintain willow plantings along Pine Creek and Coon Camp Creek. Replant new willows if survival of previous year's plantings is less than 80 percent. ➢ Disperse bitter brush seeds in the fall to recruit young plants.
FIVE DOT RANCH - TUNNEL SPRINGS DEER ZONE X5A LASSEN 2,600 ACRES	***Authorized Harvest:*** 1 buck deer forked horn or better and 2 buck pronghorn antelope • Issue 1 buck deer tag for the period of September 19, 2015 through November 30, 2015. • Issue 2 buck pronghorn antelope tags for the period of August 8, 2015 through September 20, 2015. • No person shall take more than 1 buck deer annually in the X zones.	➢ Maintain the 2-acre livestock exclusion fence at Tunnel Springs as needed. ➢ Provide mineral supplements containing selenium at 15 sites to improve wildlife health. ➢ Maintain at least 50 percent of the current year's water capacity in 2 reservoirs for wildlife. ➢ Remove at least 100 junipers from around Tunnel Springs and the reservoirs. ➢ Disperse bitter brush seeds in the fall to recruit young plants.

PLM AREA LICENSE ***NEW 5-YEAR MANAGEMENT PLANS, 2015-2020*** ***PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS***		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
FIVE DOT RANCH - WILLOW CREEK DEER ZONE X4 LASSEN 7,200 ACRES	***Authorized Harvest:*** 7 buck deer forked horn or better and 2 buck pronghorn antelope • Issue 7 buck deer tags for the period of September 19, 2015 through November 30, 2015. Of those tags, 1 shall be provided to an apprentice hunter. • Issue 2 buck pronghorn antelope tags for the period of August 8, 2015 through September 20, 2015. • No person shall take more than 1 buck deer annually in the X zones.	➢ Maintain 4 aspen and willow enclosures for deer fawning areas and repair any damaged fencing. ➢ Crush at least 25 acres of snowbrush to provide new forage at different sites in Sections 21, 22, 27, or 28. ➢ Exclude livestock grazing on 50 acres of native sage vegetation in the Triangle Field for sage-grouse and other sage dependent species. ➢ Retain water in reservoirs and ponds as water sources for wildlife use by not using all of the water for irrigation. ➢ Leave the third cutting of alfalfa on 100 acres for deer and pronghorn antelope use. ➢ Retain a 50 acre alfalfa field to preempt deer crossing the highway along the west side of Highway 139 in order to reduce deer/vehicle collisions. ➢ Provide mineral supplements with selenium at a minimum of 10 sites to improve wildlife health. ➢ Maintain 4 goose nesting platforms at Round Valley Reservoir. ➢ Thin conifers at different sites in Sections 21, 22, 27, and 28 to increase bitterbrush browse for deer.
JS RANCH DEER ZONE C3 SHASTA 6,500 ACRES	***Authorized Harvest:*** 1 bull elk and 12 buck deer forked horn or better • Issue 1 bull elk tag for the period of August 1, 2015 through November 30, 2015. • Issue 12 buck deer tags for the period of August 1, 2015 through November 30, 2015. • No more than 6 buck deer may be harvested after October 25, 2015.	➢ Maintain ½ mile of riparian livestock exclusion fencing. ➢ Maintain water in irrigation canals year round. ➢ Mechanically control the spread of blackberry thickets on 650 acres to provide more forage for wildlife. ➢ Install water bars on dirt roads adjacent to Cow Creek to prevent sediment erosion. ➢ Exclude livestock on 1,000 acres from June 1 through October 31. ➢ Irrigate at least 650 acres to provide forage for wildlife during late summer and early fall. ➢ Irrigate an additional 5 acres to provide forage for wildlife during late summer and early fall. ➢ Irrigate at least 50 acres of pasture on the Rock Garden Flats to provide elk forage, and exclude cattle from June 8 to October 1.

PLM AREA LICENSE ***NEW 5-YEAR MANAGEMENT PLANS, 2015-2020*** ***PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS***		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
JS RANCH CONT.		➢ Remove a minimum of ½ mile of interior fencing to enhance wildlife movement. ➢ Add 20 new wood duck boxes and maintain 30 existing wood duck boxes, and check for use annually on Old Cow Creek and Clover Creek. ➢ Retain wildlife cover along irrigation canal banks provided it does not interfere with ditch maintenance. ➢ Prohibit commercial firewood cutting on the property. ➢ Maintain a 200 acre area with no human disturbance for wildlife use. ➢ Maintain and repair as needed 2 existing ponds by enlarging and repairing spillways and dams.
MENDIBOURE RANCH DEER ZONE X5B LASSEN 8,840 ACRES	***Authorized Harvest:*** 3 buck deer forked horn or better and 1 buck pronghorn antelope • Issue 6 buck deer tags to take 3 buck deer for the period of September 19, 2015 through October 18, 2015. • Issue 1 buck pronghorn antelope tag for the period of August 22, 2015 through September 13, 2015. • No person may take more than 1 buck deer annually in the X zones. • In no case, shall the number of tags issued be used to exceed the authorized harvest.	➢ Maintain 3 aspen and willow livestock exclosures. ➢ Exclude livestock in the Van Loan and Big Springs area. ➢ Create a 15 acre dryland alfalfa plot and construct a fence to exclude cattle. ➢ Maintain Etchecopar Springs, Big Springs, and Deer Springs. ➢ Cut 150 mountain mahogany branches with ripe seeds to recruit young plants. ➢ Remove at least 5 acres of junipers to improve shrub and forb recruitment.
ROBERTS RANCH DEER ZONE X1 MODOC 2,313 ACRES	***Authorized Harvest:*** 2 buck deer forked horn or better and 1 buck antelope • Issue 2 buck deer tags for the period of October 1, 2015 through November 30, 2015. • Issue 1 buck antelope tag for the period of August 20, 2015 through September 20, 2015. • No person shall take more than 1 buck deer annually in the X zones.	➢ Removal of at least 100 western junipers less than 6 inches diameter at breast height to create more forage for wildlife. ➢ Remove at least 3 acres of western juniper near Spring #1. ➢ Maintain all previously developed springs, levees, and ponds. ➢ Reduce livestock levels to no more than 50 cow/calf pairs.

PLM AREA LICENSE NEW 5-YEAR MANAGEMENT PLANS, 2015-2020 PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
STEWART RANCH DEER ZONE B1 TRINITY 11,006 ACRES	***Authorized Harvest:*** 36 buck deer forked horn or better and 20 antlerless deer. • Issue 36 buck deer tags for the period of August 1, 2015 through November 30, 2015. Of those tags, 10 shall be provided to apprentice hunters. • Issue 20 antlerless deer tags for the period of September 15, 2015 through November 30, 2015. • No more than 18 buck deer may be harvested after October 25, 2015. • On or before October 15, 2015, the licensee may request (in writing) up to 5 buck tags to accomplish the authorized harvest. • In no case shall the number of tags issued be used to exceed the authorized harvest.	➢ Remove encroaching conifers from at least 20 acres of oak woodland. ➢ Reconstruct the irrigation system for 1 of the 4 irrigated food plots and replant. ➢ Replant 31 acres of dry land forage plots in grain and forbs for wildlife forage. ➢ Maintain livestock exclusion fencing around all fenced food plots and ponds. ➢ Check use and replace nesting material in 15 wood duck nest boxes. ➢ Maintain all water sources (ponds and springs). ➢ Maintain ½ mile of livestock exclusion fencing along Kekawaka Creek to improve riparian vegetation.
NORTH CENTRAL REGION		
LLANO SECO RANCHO DEER ZONE C4 BUTTE 14,500 ACRES	***Authorized Harvest:*** 25 buck deer forked horn or better and 10 antlerless deer • Issue 25 deer tags to take forked horn or better buck deer and 10 tags to take antlerless deer for the period of September 1, 2015 through November 30, 2015.	➢ Treat 400 acres of Yellow Star and Bull Thistle. ➢ Fall seeding of vetch and wheat in thistle treatment areas. ➢ Grow 100 acres of alfalfa, and 1,000 acres of dryland grains. ➢ Maintain or replace 25 existing wood duck and barn owl nest boxes. ➢ Install 2 pond turtle basking structures in ponds or backwater areas near river. ➢ Perform annual fall deer count to include in the annual Sacramento River Herd Survey data.
CENTRAL REGION		
CARNAZA RANCH SAN LUIS OBISPO 8,475 ACRES	***Authorized Harvest***: 3 bull elk and 3 antlerless elk • Issue 3 bull elk tags for the period of July 15, 2015 through December 31, 2015. • Issue 3 antlerless elk tags for the period of September 1, 2015 through December 31, 2015.	➢ Plant 100 acres of barley at 100 lbs. /acre for tule elk, quail and other wildlife. ➢ Build 3 brush piles to provide cover for upland game. ➢ Plant 10 5-gallon trees for use by wildlife. ➢ Provide year round water in existing livestock troughs for wildlife.

PLM AREA LICENSE ***NEW 5-YEAR MANAGEMENT PLANS, 2015-2020*** ***PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS***		
PLM Area	**Proposed Season and Harvest**	**Habitat Improvement Program**
CLARK AND WHITE RANCHES SAN LUIS OBISPO 5,660 ACRES	***Authorized Harvest:*** 3 bull elk and 2 antlerless elk • Issue 3 bull elk tags for the period July 15, 2015 through December 15, 2015. • Issue 2 antlerless elk tags for the period August 15, 2015 through December 15, 2015**.**	➢ Plant 1,000 acres of barley for use by elk. ➢ Repair 1 dam to increase standing water and enhance riparian/marsh habitats. ➢ Plant 100 willow stalks around dam to enhance riparian habitat for use by wildlife. ➢ Install 6 bird nest boxes.

State of California
Department of Fish and Wildlife

Memorandum

Date: March ~~9~~ 13, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Petition from the Center for Biological Diversity to list the Tricolored Blackbird as Endangered under the California Endangered Species Act**

The Department of Fish and Wildlife (Department) prepared the attached petition evaluation report in response to a petition, dated October 8, 2014, received by the Fish and Game Commission (Commission) on October 8, 2014 (Petition) from the Center for Biological Diversity to list the Tricolored blackbird (*Agelaius tricolor*) as an endangered species under the California Endangered Species Act (CESA). (See generally Fish and Game code §2073.5, subd. (a); Cal Code Regs., title 14, §670.1, subd. (d)(1).)

In accordance with CESA, the attached petition evaluation report delineates the categories of information required in a petition, evaluates the sufficiency of the information in the Petition, and incorporates additional relevant information that the Department possessed or received during the review period. Based upon the information contained in the Petition, the Department has determined that there is sufficient information to indicate that the petitioned action may be warranted. The Department recommends that the Petition be accepted.

If you have any questions or need additional information, please contact Dan Yparraguirre, Deputy Director of Wildlife and Fisheries Division at (916) 653-4673 or Eric Loft, Chief of Wildlife Branch at (916) 445-3555.

Attachment

ec: California Department of Fish and Wildlife

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State of California
Natural Resources Agency
Department of Fish and Wildlife

REPORT TO THE FISH AND GAME COMMISSION

EVALUATION OF THE PETITION FROM THE CENTER FOR BIOLOGICAL DIVERSITY TO LIST TRICOLORED BLACKBIRD (*Agelaius tricolor*) AS ENDANGERED UNDER THE CALIFORNIA ENDANGERED SPECIES ACT

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EVALUATION OF PETITION FROM CENTER FOR BIOLOGICAL DIVERSITY TO LIST THE TRICOLORED BLACKBIRD (*Agelaius tricolor*) AS ENDANGERED

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE

EXECUTIVE SUMMARY

On October 8, 2014, the Center for Biological Diversity (Petitioner) submitted a petition (Petition) seeking action by the California Fish and Game Commission (Commission) to list the tricolored blackbird (*Agelaius tricolor*) as endangered pursuant to the California Endangered Species Act (CESA) (Cal. Reg. Notice Register 2014, No. 44-Z, p. 1861; see also Cal. Code Regs., tit. 14, § 670.1, subd. (a); Fish & G. Code, § 2072.3). The Commission received the Petition on October 8, 2014 and referred it to the California Department of Fish and Wildlife (Department) for an initial evaluation on October 15, 2014. At its December 3, 2014 meeting in Van Nuys, California, the Commission voted to take emergency action to add tricolored blackbird to the list of endangered species pursuant to Fish and Game Code section 2076.5, with the related regulation as approved by the Office of Administrative Law taking effect for an initial term of six months beginning on December 29, 2014 (Cal. Reg. Notice Register 2015, No. 2-Z, p. 91).

This report presents the Department's initial scientific evaluation of the Petition as required by Fish and Game Code section 2073.5. (See also Cal. Code Regs., tit. 14, § 670.1, subd. (d).) Consistent with that authority, this report evaluates the scientific sufficiency of the Petition on its face and in relation to other relevant information the Department possesses or that it received during its review. To support the review, the Department gathered and reviewed the information referenced in the submitted Petition to the best of its ability. Not all references were available to the Department. In addition to the face value, and the material referenced in the Petition, the Department also considered other relevant information in its possession related to the tricolored blackbird populations. All sources of information considered by the Department in preparing this report, including those referenced in the Petition, are identified in the References Section. The Department's recommendation as to whether to make tricolored blackbird a candidate for listing under CESA is based on an assessment of whether the scientific information in the Petition is sufficient under the criteria prescribed by CESA to consider listing tricolored blackbird as endangered.

In completing its Petition Evaluation, the Department has determined there is sufficient scientific information to indicate that the petitioned action may be warranted. Therefore, the Department recommends that the Commission accept the Petition for further consideration under CESA.

Summary of Department's Evaluation of the Petition

A petition to list or delist a species under CESA must include information pursuant to Fish and Game Code section 2072.3 as follows:

- population trend;

- range;
- distribution;
- abundance;
- life history of a species;
- factors affecting the ability of the population to survive and reproduce;
- degree and immediacy of the threat;
- impact of existing management efforts, suggestions for future management;
- availability of and sources of information;
- habitat necessary for a species survival;
- detailed distribution map.

The Department finds that the Petition provides adequate information in the categories required by CESA and that the petitioned action may be warranted.

This report summarizes the Department's evaluation of the Petition and other available information. It follows the outline and summarizes relevant portions of the Department's 2004 evaluation of the petition to list the tricolored blackbird, which is incorporated by reference (Gustafson and Steele 2004).

The Department believes that the petitioned action may be warranted based on the degree and immediacy of the threats faced by the species which are addressed by the Petition, as follows:

1) Historical and continuing loss of nesting substrate, including wetlands, Himalayan blackberry (*Rubus discolor*) patches, upland weedy vegetation, and marsh vegetation in reservoirs and ponds.

2) Historical and continuing loss of uplands used for foraging.

3) Declines in tricolored blackbird populations in the past 80 years, including ongoing declines documented since 2008.

4) Significant, large-scale reproductive failures in tricolored blackbird colonies nesting in agricultural areas of the San Joaquin and Sacramento valleys.

5) Limited, inconsistent, and sometimes ineffective protection of colonies nesting in agricultural settings.

6) Ineffectiveness of existing regulatory mechanisms to protect tricolored blackbird breeding habitat and nesting colonies on privately-owned land.

7) Predation by the black-crowned night heron (*Nycticorax nycticorax*), cattle egret (*Bubulcus ibis*), common raven (*Corvus corax*), coyote (*Canis latrans*), and other predators, especially in areas in which predator populations may be artificially high due to concentrated food sources.

INTRODUCTION

Candidacy Evaluation

CESA sets forth a two-step process for listing a species as endangered. First, the Commission determines whether a species is a candidate for listing by determining whether "the petition provides sufficient information to indicate that the petitioned action may be warranted." (Fish & Game Code, § 2074.2, subd. (a)(2).) Within 10 days of receipt of a petition, the Commission must refer the petition to the Department for evaluation (Fish & Game Code, § 2073.) The Commission must also publish notice of receipt of the petition in the California Regulatory Notice Register. (Fish & Game Code, § 2073.3.) Within 90 days of receipt of the petition, the Department must evaluate the petition on its face and in relation to other relevant scientific information and submit to the Commission a written evaluation report with one of the following recommendations:

- Based upon the information contained in the petition, there is not sufficient information to indicate that the petitioned action may be warranted, and the petition should be rejected; or
- Based upon the information contained in the petition, there is sufficient information to indicate that the petitioned action may be warranted, and the petition should be accepted and considered.

(Fish & Game Code, § 2073.5, subd. (a)(1).)

If the petition is accepted for consideration, the second step requires the Commission to determine, after a year-long "scientific-based review of the subject species," whether listing as endangered is or is not actually warranted. (Fish & Game Code, § 2075.5.)

In *Center for Biological Diversity v. California Fish and Game Commission* (2008) 166 Cal.App.4th 597, the California Court of Appeals addressed the parameters of the Commission's discretion in its application of the threshold candidacy test. The court began its discussion by describing the candidacy test previously set forth in *Natural Resources Defense Council v. California Fish and Game Commission* (1994) 28 Cal.App.4th 1104, 1114:

> As we explained in *Natural Resources Defense Council* [citation], "the term 'sufficient information' in section 2074.2 means that amount of information, when considered with the Department's written report and the comments received, that would lead a reasonable person to conclude the petitioned action may be warranted." The phrase "may be warranted" "is appropriately characterized as a 'substantial possibility that listing could occur.'" [citation] "Substantial possibility," in turn, means something more than the one-sided "reasonable possibility" test for an environmental impact report but does not require that listing be more likely than not.

(*Center for Biological Diversity*, at pp. 609-10.) The court acknowledged that "the Commission is the finder of fact in the first instance in evaluating the information in the record." (*Id.* at p. 611.) However, the court clarified:

> [T]he standard, at this threshold in the listing process, requires only that a substantial possibility of listing could be found by an objective, reasonable person. The Commission is not free to choose between conflicting inferences on subordinate issues and thereafter rely upon those choices in assessing how a reasonable person would view the listing decision. Its decision turns not on rationally based doubt about listing, but on the absence of any substantial possibility that the species could be listed after the requisite review of the status of the species by the Department[.]

(*Ibid*.)

Petition History

Previous State Petitions

In 1991, based on information indicating that the tricolored blackbird's breeding population had fallen to about 35,000 adults in the late 1980s, the Yolo chapter of the National Audubon Society submitted a petition to the Commission, to list the species as Endangered. After reviewing the document and other available information, the Department determined that the petitioned action might be warranted and recommended to the Commission that it accept and consider the petition. In March 1992, the Commission voted to accept the petition and designated the tricolored blackbird as a candidate for State listing. Researchers working during the 1992 breeding season discovered that the population might exceed 300,000 adults. The Yolo Audubon Society withdrew the petition based on the new population data. The Commission allowed the petition to be withdrawn, but urged the Department to work with interested persons and groups to develop conservation measures for the tricolored blackbird. The species was again petitioned to be listed under CESA in 2004. The petition evaluation report by the Department (Gustafson and Steele 2004) stated there was sufficient information to indicate the petitioned action may be warranted; the Commission voted to reject the petition (Fish and Game Commission meeting, Feb. 3, 2005).

Federal Petitions

In the late 1970s, the USFWS identified the tricolored blackbird as a candidate for federal listing. However, in the early 1990s, the USFWS eliminated its list of candidate species. In 1988, the USFWS contracted for a compilation of all historical information on distribution and abundance of the tricolored blackbird, resulting in the work of Beedy *et al.* (1991). In 1989, the USFWS modified two long-standing depredation orders, to prohibit killing the tricolored blackbird without a federal permit. The USFWS has also provided funds for tricolored blackbird survey efforts in several years beginning in 1993. In 2006, the USFWS in response to a listing petition issued a 90-day finding that listing the tricolored blackbird was not warranted. In 2008, the USFWS updated its Birds of Conservation Concern 2008 report, identifying "species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973" (USFWS 2008). The tricolored blackbird was included on two Bird Conservation Region lists (9, 32), the USFWS Region 8 list (California and Nevada) and the National list. On February 3, 2015, the Center for Biological Diversity submitted a petition to the USFWS to list the tricolored blackbird as an

endangered species under the federal endangered species act and to designate critical habitat concurrent with listing.

INFORMATION PROVIDED IN THE PETITION AND ADDITIONAL INFORMATION GATHERED BY THE DEPARTMENT OF FISH AND WILDLIFE

Population Trend (termed "Population Status and Trend" in the Petition, beginning on page 6)

The Petition states that based on extensive historical and recent statewide surveys, the tricolored blackbird "has experienced and is continuing to experience a precipitous population decline." The Petition includes data from the various statewide surveys through the 2014 survey. Several major studies as well as smaller studies and summaries, beginning in the 1930s, have documented numbers and breeding colonies of the tricolored blackbird (Neff 1937, DeHaven *et al.* 1975a, Hosea 1986, Beedy *et al.* 1991, Hamilton *et al*. 1992, Hamilton 1993, Hamilton *et al*. 1995, Beedy and Hamilton 1997, Hamilton *et al.* 1999, Hamilton 2000, DeHaven 2000a, Humple and Churchwell 2002, Hamilton 2004, Green and Edson 2004, Cook and Toft 2005, Kelsey 2008, Meese 2009a, Meese 2010, Kyle and Kelsey 2011, Meese 2011, and Meese 2014). As noted in the Petition, survey effort, methods, coverage, and participants have varied over the years. Thus, it is difficult to compare total number of birds observed or population estimates across many of the survey years.

The Petition describes a decline in numbers of the tricolored blackbird since the 1930s, particularly for the Central Valley of California. Early research on the tricolored blackbird was carried out by Neff and colleagues in the 1930s (Neff 1937). Over a period of six years (1931-1936), Neff surveyed tricolored blackbird colonies across California and suggested that the species numbered in the millions. Neff located several breeding colonies of more than 100,000 nests in the Sacramento Valley, with the largest composed of greater than 200,000 nests (corresponding to approximately 300,000 adult tricolored blackbirds). Breeding colonies were located throughout the Central Valley and in a few additional locations in California and southern Oregon; however, Neff's surveys focused on the Sacramento Valley in most years. An effort to cover the entire known range of the species was attempted by Neff in only one year (1932), with most areas outside the Sacramento Valley covered incidentally as "cooperators drove up or down the State in the performance of routine duties". The highest concentration of colonies and breeding birds were located in the Sacramento Valley; the degree to which this was the result of increased effort there is not known. Based on his somewhat geographically limited efforts, Neff (1937) reported nesting birds in 26 California counties in the period of 1931-36. Working alone in 1934, Neff (1937) observed an estimated 491,250 nests, almost all of which were in the Sacramento Valley. As reported in the Petition, Beedy and Hamilton (1997) interpreted this to represent about 736,500 breeding adults. The presence of birds in the San Joaquin Valley and southern California was noted in the same year, but no effort was made to estimate numbers. Neff's work in the 1930s, as interpreted by Hamilton *et al.* (1995), yielded an estimated maximum annual abundance of over 1,100,000 adult tricolored blackbirds in the Central Valley.

The Petition states that a history of market hunting and massive loss of native marshland habitat had drastically reduced the population of tricolored blackbirds by the mid-twentieth century. However, Neff (1937) concluded: "Destruction of the birds by man, of nesting sites through drainage or reclamation, of nests by predators or by the elements, and other factors, have played their part. All combined, however, they have made only fractional inroads on this species during the period covered by this report [1931-1936]". Neff (1937) was not convinced that the population size in the 1930s was less than that during "pioneer times". Being that the next comprehensive effort to survey tricolored blackbirds did not occur until the 1970s (DeHaven *et al*. 1975a), it is not known to what degree the population had been reduced by the mid-twentieth century. However, the estimate by Hamilton *et al.* (1995) of 1,100,000 tricolored blackbirds in the 1930s is subject to high uncertainty and the Department acknowledges that because of the relatively limited effort during the surveys of the 1930s, the number of birds present at that time could have been much higher. Also, there is evidence that the species had experienced declines in a large portion of its range in southern California, even by the 1930s (see discussion of distribution and abundance below).

From 1969-1972, DeHaven *et al.* (1975a) attempted to survey the entire range of the tricolored blackbird to document the distribution of the species and to compare estimates of abundance to those provided by Neff (1937). The surveys were carried out by a few individuals surveying vast areas by road, and were limited to one or two drives through each county where tricolored blackbirds were known to occur in California and southern Oregon. Still, the search effort was at least as extensive as that carried out by Neff in the 1930s, and included the benefit of improved transportation and an increased number of roads. In many counties the survey consisted of driving county roads with little knowledge of historical colony sites, but this was an improvement over much of the effort of the 1930s, when counties were considered covered if visited incidentally to other activities. Despite a greater search effort, all measures of abundance indicated a decline: number of colonies detected declined from 256 to 164; non-breeding birds encountered declined from >50,000 in a single year to <15,000 over four years; maximum colony size declined from hundreds of thousands to tens of thousands; number of birds observed per year within the study period declined from about 375,000 per year to about 133,000 per year (DeHaven *et al.* 1975a). Although no population estimate could be obtained from these surveys, the authors suggested that the population may have declined by more than 50% in 35 years. The distribution of colonies was similar to that in Neff (1937). The Petition states that DeHaven *et al.* (1975a) concluded that the downward trajectory of the population was continuing in the 1970s, however Dehaven *et al.* (1975a) expressed uncertainty about this, and recommended further research to determine whether the decline they observed was ongoing.

Since 1994, ten tricolored blackbird surveys have been conducted. However, as mentioned above, the survey effort, methods, coverage, and participants have varied (Kelsey 2008, Meese 2014) making it difficult to compare total population estimates across many of the survey years. Because of this, in evaluating the 2004 petition the Department used the largest detected colony size in any given year as an indicator of population status. This was based on the assumption that the largest colonies are most likely to be detected and largest colony size is correlated with total population size (Gustafson and Steele 2004). The Department also evaluated Christmas Bird Count data to evaluate trends in the non-

breeding season. Based on these sources of data, the Department found an apparent downward trend in the tricolored blackbird's breeding population from the 1930s to the 1970s, and again from the 1970s until 2004. At that time, the Department concluded that the extent of the decline between 1994 and 2004 was not clear.

Of the ten annual surveys conducted since 1994, two groups of survey years have been reported to be most comparable across years (years 1994, 1997, 2000; and years 2008, 2011, 2014) (Beedy and Hamilton 1997, Hamilton et al. 2000, Kyle and Kelsey 2011, Meese 2014). The degree to which these two groups of survey years are comparable to each other is not clear, although differences in methodology and effort between the groups suggest caution is warranted in making comparisons. Hamilton (2000) reported that statewide survey efforts in 1994, 1997, and 2000 followed similar methods in order to locate and survey as many colonies as possible. At the time, these three surveys had used the most consistent methods to date and focused the survey on a short time period in order to avoid double counting of birds. Compared to the surveys of the 1930s and 1970s, these surveys employed many more volunteer surveyors in order to cover as much of the state and known colonies as possible. Hamilton (2000) reported that "Serious amateur and professional birders located most of all birds recorded". Most large (>10,000 birds) and many smaller colonies reported during these survey years were revisited by tricolored blackbird experts. That said, inconsistencies in effort still occurred with the 1997 survey using fewer observers to visit fewer sites in fewer counties than the 1994 survey, and the 2000 survey using more observers to visit more sites than the other two survey years, but searching in fewer counties. These inconsistencies led the Department to conclude that the extent of decline during the period was unclear. Hamilton (2000) however, concluded:

> "The central conclusion of the Census and survey is that tricolors [tricolored blackbirds] are continuing to decline precipitously in numbers, from millions in the 1930s (Neff 1937) to an estimated…162,000 in this account for 2000. The conclusion that tricolor numbers are plummeting is based not only upon these data, but also on the collective experience of local experts throughout California who have observed tricolors over long intervals."
>
> "…the method of the Census and the survey, to reinvestigate all known breeding places and to search for new ones, has become an increasingly complete assessment of Tricolored Blackbird distribution and abundance. The 2000 Census probably located a greater proportion of the entire population than did censuses in previous years."

Based on their analysis of annual results from statewide surveys, Cook and Toft (2005) reported that the tricolored blackbird population had declined by approximately 56% between 1994 and 2000. They also determined that colony sizes were smaller on average in 2000 than in 1994, which they attributed to a declining overall population for the species.

It is possible that the size of the largest colony does not have a strong correlation with population size, especially over long periods of time when the population has shifted breeding distribution and choice of primary nesting substrate for large colonies (e.g. use of agricultural crops, particularly triticale (*Triticale hexaploide*) fields beginning sometime after the 1970s). The average of the largest several colonies

(three, five, and ten have been reported in the literature) might be a better correlate to population size, but it is important to compare colony size only for sites that are estimated during the same time period each year. Colony size can vary across the breeding season and therefore using different dates would likely obscure the relationship. In reports available to the Department, it is often unclear which data have been used to develop estimates of average colony sizes; this warrants additional work to evaluate trends presented by Hamilton (2000), Cook and Toft (2005), and those included in the Petition for the period of 1994-2000.

Following the 2000 survey, triennial statewide surveys were reestablished in 2005. However, a rigorous and consistent methodology has been used only since 2008 (see Kelsey 2008, Kyle and Kelsey 2011, Meese 2014). These recent surveys employ hundreds of volunteers over a three day period in an attempt to visit and estimate numbers of tricolored blackbirds at all known historical and current colony sites. The effort in each county was coordinated by a county coordinator in 2008 and 2014, with a statewide coordinator overseeing the entire effort in all years. In each of the three most recent survey years (2008, 2011, and 2014), volunteers have been provided with training in tricolored blackbird identification, estimation of colony size, use of maps on online tools, and a standard survey protocol. Many of the participants, especially those coordinating county efforts, have been knowledgeable observers with experience participating in multiple survey years. The Department acknowledges that the lack of error estimation in the census method makes it difficult to assess the accuracy of results for any given year, however the increase in knowledge in recent years on historical and current colony sites, along with consistent methodology and increased participation and effort has likely resulted in an increased ability to detect a downward trend over the past six year period. The statewide survey protocol is available at http://tricolor.ice.ucdavis.edu/content/2014-statewide-survey.

In the most recent years, the number of birds observed on statewide surveys declined 63% from 395,000 birds in 2008 to about 145,000 birds in 2014. In this same time period, maximum colony size has declined from 80,000 to less than 30,000 birds (Kelsey 2008, Kyle and Kelsey 2011, Meese 2014). Although not a statistical estimate of population size, the census provides an index of population size by attempting to visit all known sites, including new sites that are established by colony movement. This effort to visit all known sites, along with a continual increase in knowledge about historical and current colony sites has resulted in an increase in survey effort with each statewide survey. For example, more counties were surveyed in 2014 than on any previous survey and the number of observers participating on the 2014 survey (143) was exceeded on only one previous survey (155 observers in 2008). Perhaps most importantly, the number of colony sites visited in 2014 far exceeded any other survey, with a large increase in sites visited each survey year since 2008 (Figure 1); this reflects not only a sharp increase in knowledge of colony sites, but also an enormous effort to visit as many as possible during the count period. The number of birds observed has declined despite the increase in effort.

Small breeding colonies are likely missed during each survey, especially in areas where small colonies might occur distant from any known colony site, and therefore are not located within the focused search area. Because tricolored blackbird colonies are extremely conspicuous leading up to and throughout most of the nesting cycle, most large colonies that would contribute substantially to the overall statewide estimate are likely to be observed during the three day search window. Given the

concentration of birds in relatively few large colonies and within a few well known and well surveyed portions of their range (especially the San Joaquin Valley), Kelsey (2008) concluded that "it is unlikely that large numbers of Tricolored Blackbirds go undetected during the statewide surveys". Additionally, in areas of the state where most of the population breeds early in the nesting season (San Joaquin Valley), extensive pre-survey scouting occurs in an attempt to locate colonies, both for survey purposes and to initiate colony protection efforts where colonies occur on agricultural fields. Even if a colony site is not visible from a road, large colonies can be detected and identified by the species' diagnostic feeding flights as they move between the colony location and foraging habitat. The density of roads may limit observation of some portion of the landscape; this is a limitation common to all survey years.

The Department finds the Petitioner submitted sufficient information to demonstrate or create a reasonable inference that tricolored blackbirds have experienced historic declines and may continue to do so.

Range and Distribution (beginning on page 17)

The Petition provides a description of the tricolored blackbird's range. The Petition also provides information on the species' distribution throughout portions of its range and states that historical distribution and population abundance of tricolored blackbirds prior to widespread loss of their native wetland and grassland habitats are unknown..

The Petition provides the following information regarding the tricolored blackbird range. The Petition characterizes the geographic range of the tricolored blackbird as "largely restricted to southernmost Oregon and the Modoc Plateau of northeastern California south through the lowlands of California west of the Sierra Nevada to northwestern Baja California" with rare reports of tricolored blackbird from Nevada and Washington. Overall, the range of the tricolored blackbird has not appreciably changed since the mid-1930s (Meese *et al.* 2014). The Petition states that the tricolored blackbird has been found from sea level up to 4,200 feet (1280 meters) at Klamath Lake. Grinnell and Miller (1944) included a record of 4,400 feet on the "South Fork of the Pit River" in Modoc County.

Grinnell and Miller (1944) wrote that the tricolored blackbird is "resident within [California], but partly migratory within Sacramento-San Joaquin drainage system; all populations are in some degree nomadic and in fall and winter normally leave the immediate vicinity of the nesting colonies". DeHaven *et al.* (1975a) reported that 78% of colonies located between 1968 and 1972 were in the Central Valley. Counties where most colonies were found in a single season during this time period were Sacramento, Merced, Stanislaus, Glenn, and Colusa. According to Beedy (2008), since 1980, active breeding colonies have been observed in 46 California counties. Colonies are typically largest in the Central Valley and are patchily distributed throughout but particularly in the Coast Ranges and on the coastal slope.

In all statewide surveys conducted since 1994, the majority (≥90% in all years but 1997) of the population has occurred in the Central Valley counties during the April breeding season, with much of the population and the largest colonies in agricultural fields (see below).

During the winter, the tricolored blackbird withdraws from those portions of its summer range in California outside of the Central Valley, from Santa Barbara County, and from eastern San Diego County (Meese *et al.* 2014). Although the tricolored blackbird is a year-round resident of the remainder of its summer range in California, "it largely withdraws in winter from [the southern] San Joaquin Valley and [northern] Sacramento Valley ([becoming] rare in Sacramento Valley north of Sacramento Co.), concentrating in and around Sacramento-San Joaquin River Delta and coastal areas, including Monterey and Marin Cos. [*sic*]. Small flocks may appear at other coastal locations from Sonoma Co. south to San Diego County and sporadically north to Del Norte Co." (Unitt 2004, Meese *et al.* 2014). This is consistent with the winter distribution reported by Grinnell and Miller (1944): "Many individuals move northwestward in San Joaquin Valley and south in Sacramento Valley to form concentrations in the delta [of the Sacramento and San Joaquin rivers] regions and in vicinities of Suisun, San Pablo, and San Francisco bays". Wintering flocks numbering 12,000-14,000 assemble near dairies on Point Reyes Peninsula, Marin Co., by mid-October. Some individuals also winter in central and [southern] San Joaquin Valley (Meese *et al*. 2014).

The Petition presents evidence that tricolored blackbirds have declined or disappeared from portions of their range including portions of the Central Valley where the species was once abundant. The species no longer occurs at many historical sites in coastal southern California, including Los Angeles and San Diego where the tricolored blackbird was once described as the most abundant species. Additional assessment of distributional changes and shifts in centers of abundance is warranted.

While the Department finds minor inconsistencies in the Petition's assessment of Range and Distribution, the Department nonetheless concludes that Petitioners have submitted sufficient information to demonstrate or create a reasonable inference that the tricolored blackbird has experienced a reduction in distribution in a portion of its range in California and may continue to do so.

Abundance (termed "Population Status and Trends" in the Petition, beginning on page 6 and "Abundance" in the Petition, beginning on page 23)

Grinnell and Miller (1944) described the status of the tricolored blackbird as "common to abundant locally" but noted a general decrease in southern California. Dawson (1923) reported the species as "locally abundant…in the San Diegan district…" The species was considered "not rare" in Santa Barbara County, abundant near Los Angeles, and the most abundant species near San Diego (Cooper 1870, Baird 1870 and Baird *et al.* 1874 *in* Beedy 2008). Neff (1937), in the first major work on the tricolored blackbird, did not estimate the overall breeding population in the Central Valley. However, in just eight counties in 1934, he estimated the abundance of tricolored blackbirds in California at 252 colonies, many of which were quite large, and that there were more than 700,000 adults per year. Orians (1961a) reported that, in 1959 and 1960, there were four tricolored blackbird colonies larger than 100,000 adults. All were in the rice-growing area in Colusa and Yolo counties. By the late 1970s, the tricolored blackbird was characterized as a local resident in the southern California coastal district and the Antelope Valley, generally common where they occurred (Garrett and Dunn 1981). Meese (2014) documented 12,386 birds for the southern California region as compared to fewer than 6,000 in 2011 as reported by Kyle and Kelsey (2011).

The largest reported colony in the 1970s was one in Colusa County comprising an estimated 30,000 adults (Beedy and Hayworth 1992). DeHaven *et al.* (1975a) located 168 breeding colonies, about 78% of which were in the Central Valley. In the 1980s, the largest reported colony was one at Kesterson Reservoir in 1986, with an estimated 47,000 adults (Beedy and Hayworth 1992). Beedy *et al.* (1991) stated that the "average [tricolored blackbird] colony size has declined dramatically since the 1930s". In 1994, Hamilton *et al.* (1995) found that the largest colony, at San Luis National Wildlife Refuge (NWR), numbered about 105,000 adult tricolored blackbirds. In 1997, Beedy and Hamilton (1997) reported the largest colony to contain about 80,000 adults. By 2000, surveyors found that the largest colony comprised about 30,000 birds (Hamilton 2000). Since 2008, the population estimate declined 63% from 395,000 birds in 2008 to about 145,000 birds in 2014 (Kelsey 2008, Kyle and Kelsey 2011).

The Petitioner has described many relevant sources of information on historical and recent abundance to adequately describe much of the historical and recent work on population abundance. As discussed in the population trends section, issues of comparability across survey years and the degree to which surveys produce accurate rangewide population estimates warrant further evaluation.

Life History (in the Petition, beginning on page 25)

The Department found the Petition provided sufficient information to demonstrate or create a reasonable inference that some tricolored blackbird life history traits render them particularly vulnerable to natural and anthropogenic threats. Additional information is provided by the Department under the select subheadings, as follows.

Taxonomy and Genetics

The tricolored blackbird is a species in the avian family Icteridae (blackbirds, cowbirds, grackles, meadowlarks, and orioles). No subspecies are recognized (AOU 1957).

Although Berg *et al.* (2010) found no significant population structuring between southern and northern California populations of tricolored blackbirds, they found higher allelic diversity in the southern population. This suggests the southern population is an important genetic reservoir for the species.

Habitat Requirements

According to Grinnell and Miller (1944), tricolored blackbird habitat in the nesting season was found in the "vicinity of fresh water, especially marshy areas. The most favored sites for colonies are heavy growths of cattails and tules, but even when these are available, other vegetation may be resorted to for nesting: sedges, nettles, willows, thistles, mustard, blackberry, wild rose, foxtail grass, barley, etc." Meese *et al.* 2014 summarized tricolored blackbird breeding habitat requirements as a nesting substrate that is relatively impenetrable or is flooded, is adjacent to water, and is within a few kilometers of foraging areas such as rangeland, alfalfa or cut hay, or irrigated pasture, with adequate insect prey. Tricolored blackbird nesting in cereal crops and dairy silage was not known until after the 1970s.

In winter, tricolored blackbirds often congregate with other species of icterids and European starlings (*Sturnus vulgaris*) that forage in grasslands, agricultural fields with low-growing vegetation, and at dairies and feedlots (Beedy 2008, Meese *et al.* 2014). Meese *et al.* (2014) wrote that the tricolored blackbird's preferred winter roosting sites included "cattail and bulrush marshes near suitable foraging areas in pasturelands, recently cultivated croplands, and livestock feedstores".

Colonial Breeding

The tricolored blackbird is the most highly colonial of North American passerine birds (Neff 1937, Lack and Emlen 1939, Meese *et al*. 2014). Bent (1958) found that the tricolored blackbird "nests in enormous, most densely populated colonies, the nests being placed more closely together than in any other colonies of marsh-nesting blackbirds". Grinnell and Miller (1944) stated that "one essential would seem to be provision at the site of the colony for a large number of individuals. Nests apparently must be close together and pairs usually [must be] in excess of 50 in order to meet the instinctive requirements of the species". Meese *et al.* (2014) wrote that the status of the tricolored blackbird is of concern, "because its population has declined and its colonial nesting behavior makes it vulnerable to nesting failures affecting thousands of nests at a single colony".

Breeding and Post-Breeding Behavior

The tricolored blackbird is highly nomadic (Neff 1937, 1942; DeHaven and Neff 1973). A flock of tricolored blackbirds can appear in an area in which it has been absent for months and begin to form a nesting colony (Orians 1961b). Orians (1961a) interpreted fluctuations in numbers of tricolored blackbirds during the breeding season to be responses to local abundance of insects. Hamilton (1998) suggested that these fluctuations are due to "itinerant breeding", describing the possibility that "variable local abundance between years is the result of itinerant breeding movements during the breeding season after predators, agricultural operations, and adverse weather destroyed colonies". Itinerant breeding applies to those individuals "nesting at more than one geographic location in the same year" (Hamilton 1993). A noted pattern is for individuals to move northward after their first nesting efforts in the San Joaquin Valley and in Sacramento County into the Sacramento Valley, northeastern California, and southern Oregon (Beedy and Hamilton 1997). In the spring, the tricolored blackbird vacates its wintering areas and arrives at nesting locations in Sacramento County and the San Joaquin Valley in the period from early March to early April (DeHaven *et al.* 1975b). In the Sacramento Valley, the largest colonies are formed during May and early June (Meese *et al.* 2014). In southern California, the tricolored blackbird may nest anytime throughout April and June (Unitt 2004). Orians (1960) reported successful autumnal breeding in the tricolored blackbird in colonies in the Sacramento Valley. Payne (1969) believed that autumnal nesting was related to rainfall and abundance of insect food and/or abundance of rice. Hamilton *et al.* (1995) reported tricolored blackbirds breeding in August 1993 "along the Marin coast". DeHaven *et al.* (1975b) found that the tricolored blackbird exhibits a major postbreeding-season movement into the Sacramento Valley. In winter, tricolored blackbird numbers decline in the Sacramento Valley and increase in the delta of the Sacramento and San Joaquin rivers (Neff 1937, Orians 1961b, DeHaven *et al.* 1975b). Nonbreeding flocks can consist of only tricolored blackbirds in either mixed-sex or single-sex groups, or they can be tricolored blackbirds mixed with the

red-winged blackbird (*Agelaius phoeniceus)*, Brewer's blackbird (*Euphagus cyanocephalus*), and European starling, and other species (Meese *et al.* 2014).

Factors Affecting Ability of Population to Survive and Reproduce (in the Petition, beginning on page 36)

The Petition addresses the loss of nesting and foraging habitat throughout the breeding distribution of the species including the destruction of native wetland and suitable upland breeding habitats, and nesting colony destruction by agricultural activities during the breeding season that results in direct mortality of nestlings. The Petition also describes early market-hunting and poisoning of tricolored blackbirds and provides information on predation and on mortality due to contaminants. The Petition also lists causes of mortality such as exposure to inclement weather, predation (under Life History section in the Petition, page 30), starvation of young, and possible removal of live young from nests by female tricolored blackbirds. The Petition also asserts that "the Tricolored Blackbird is not protected by existing regulatory mechanisms".

Habitat Loss

Neff (1937), observing that "the destruction of [tricolored blackbird] nesting habitats by man is of most importance", cited "reclamation and drainage" as key factors in the loss of many favorable sites, along with "dredging or cleaning of reservoirs, marshes, and canals in order to destroy the growths of cattails and tules". Subsequent workers have documented or commented upon habitat loss continuing through the present (Beedy *et al.* 1991, Hamilton 1993, Hamilton *et al.* 1999, Meese *et al.* 2014, DeHaven 2000a, Humple and Churchwell 2002, Beedy 2008). In the year 2000, DeHaven (2000a) observed widespread habitat loss due to urban expansion and agricultural conversions relative to the 1970s when he and others conducted tricolored blackbird research. Survey participants in recent years continue to document changes in the landscape at or around tricolored blackbird colony sites, with both nesting and foraging habitat being removed or converted to other uses. Meese *et al.* (2014) stated that the "greatest effects of human activity [affecting the tricolored blackbird] are related to habitat loss and alteration". The Department believes breeding and foraging habitat loss represents a threat to tricolored blackbird populations.

Agricultural Activities

The Petition describes the use of grain silage fields for nesting by tricolored blackbirds and the fact that normal harvesting activities typically coincide with the breeding season. Harvesting of fields that contain nesting colonies results in nest destruction and direct tricolored blackbird mortality. Table 4 and Figure 4 in the Petition summarize at least some of the losses of colonies due to harvesting thought to have occurred between 1993 and 2013. Entire tricolored blackbird colonies (up to thousands of nests) in cereal crops and silage have been destroyed by harvesting and plowing of agricultural lands (Meese *et al.* 2014). The Department believes that harvesting of fields containing tricolored blackbird colonies continues to occur and is a threat to tricolored blackbird populations.

Low Reproductive Success

Meese (2013) found widespread reproductive failures at tricolored blackbird colonies in the Central Valley from 2006 to 2011. Relatively high reproductive success was observed only when nearby foraging areas supported high insect abundance, suggesting that many tricolored blackbird colonies may be food limited. Cook and Toft (2005) noted that between 1992 and 2003, "Reproductive success was significantly higher in upland non-native vegetation (primarily Himalayan blackberry *Rubus discolor*) than in native emergent cattail *Typha* spp. and bulrush *Scirpus* spp. marshes", and concluded that low reproductive success had contributed to recent declines.

Predation

Various workers provided evidence for predation on tricolored blackbirds, their eggs or nestlings by gopher snake (*Pituophis catenifer*), king snake (*Lampropeltis* sp.), black-crowned night-heron, Cooper's hawk (*Accipiter cooperii*), Swainson's hawk (*Buteo swainsoni*), merlin (*Falco columbarius*), burrowing owl (*Athene cunicularia*), northern harrier (*Circus cyaneus*), barn owl (*Tyto alba*), short-eared owl (*Asio flammeus*), yellow-billed magpie (*Pica nuttalli*), American crow (*Corvus brachyrhynchos*), coyote, wolf (*Canis lupus*), gray fox (*Urocyon cinereoargenteus*), and possibly mink (*Mustela vison*) and raccoon (*Procyon lotor*), and feral domestic cat (*Felis catus*), showing that predation on breeding tricolored blackbirds by a diverse set of predators has occurred throughout the historical record (Mailliard 1900, Neff 1937, Payne 1969, Beedy and Hamilton 1997, Meese *et al.* 2014). Beedy and Hamilton (1997) reported that more recently, black-crowned night-herons have eliminated all or most nests at several freshwater marsh breeding colonies. Meese (2012) described the increasing pressure on tricolored blackbird colonies by cattle egrets. The Department believes that predation poses a threat to the success of some tricolored blackbird nesting colonies and that the type of nesting substrate can influence vulnerability to predation. Predation is a natural occurrence, but there has been a steady increase in population sizes of several major avian predators in California (black-crowned night heron, cattle egret, American crow, and common raven) over the last 40 years (Sauer *et al*. 2008 as cited in Kelsey 2008). The Department recognizes that small areas of native vegetation are especially vulnerable to predation, especially if they are near sites at which predator populations are at artificially-high levels due to the availability of augmented food sources from human activities. The drastic reduction in extent of spring and summer wetlands in California may have also concentrated predator populations in the remaining wetlands more than was true historically (Cook and Toft 2005).

Agricultural Contaminants

The Petition provides a summary of pesticide use in Sacramento, San Joaquin, Merced, Fresno, and Tulare counties under the heading Poisons and Contaminants (beginning page 45); information provided in the Petition is from year 2002 California Department of Pesticide Regulation data. Much of the discussion previously appeared in the 2004 petition to the State to list the tricolored blackbird (CBD 2004). The Department's earlier evaluation of the information (Gustafson and Steele 2004) is relevant and excerpted below:

“The loss of Tricolor [tricolored blackbird] breeding effort due to application of herbicides at colony sites has been documented (Hosea 1986, Hamilton *et al.* 1995, Beedy and Hamilton 1999). Hosea (1986) reported that two colonies in Colusa and Sacramento counties near rice fields were oversprayed during aerial application of herbicides resulting in the poisoning of almost all the nestlings. However, Hamilton *et al.* (1995) stated, “Despite the limited evidence that Tricolored Blackbirds are suffering some mortality as a result of patterns of chemical use in agricultural areas, poisons do not appear to be inducing a serious population problem for Tricolored Blackbirds”.

The petition does not analyze the data available in the pesticide-use reporting database of the California Department of Pesticide Regulation. The database contains types and quantities of pesticides applied to crops utilized by the Tricolor. The petition does not evaluate pesticide-use patterns in relation to historical locations of Tricolor nesting colonies. Instead, the petition’s focus is on individual pesticides that have high use rates or that are toxic to birds. The assessment is not representative of the risk posed by pesticides to the Tricolor. The majority of the pesticides cited in Table 5 of the petition are not expected to have a significant impact on the species. The use of the following chemicals listed in the petition, if they are applied as required, may not pose a significant risk to the Tricolor: methyl bromide, metam-sodium, aluminum phosphide, oryzalin copper sulfate, chlorophacinone, diphacinone, strychnine, zinc phosphide, and petroleum oil.

The petition, citing Beedy and Hayworth (1992), describes the effects of possible selenium toxicosis on a Tricolor colony. Hamilton (2000) knew of “no evidence that toxic contaminants have adversely affected” the Tricolor since the work of Beedy and Hayworth (1992). Beedy and Hayworth (1992), working in the Central Valley in 1987, compared the reproductive success of the Tricolor colony at Kesterson Reservoir in Merced County, which had a history of selenium contamination, with the success at four other colonies. Although Beedy and Hayworth (1992) noted nesting failure at colonies in addition to the one at Kesterson, they concluded that “further research is needed to determine whether the nesting failures observed were isolated phenomena or indicative of a more widespread general decline of this species”. The deformities observed in Tricolor chicks in the nesting colonies at Kesterson, which have been attributed to selenium, occurred in the 1980s prior to the cleanup of the area and prior to cessation of the use of selenium-laden agricultural drain water to maintain the wetlands at Kesterson. Since that time, no impact of contaminants such as selenium on Tricolor nesting success has been documented.

The petition reports that a biologist observed a colony sprayed by mosquito abatement operators in Kern County and that all sprayed eggs failed to hatch. The Department does not know whether any eggs from this colony were tested to determine a cause for the failure to hatch. We also are unaware of whether the spraying equipment disturbed the colony to the extent that adult birds abandoned their nests. In any case, we do not know whether application of mosquito larvicides or adulticides poses a direct threat to the Tricolor. The potential impact of these chemicals on other invertebrates that make up much of the food sources of Tricolors is

apparently not known. In addition, the physical disturbance resulting from applications of mosquito-control pesticides in the immediate vicinity of a nesting colony may result in the abandonment of the colony. The Tricolor is quite sensitive to disturbance during certain phases of the breeding cycle and will readily abandon an established colony, even with young in the nests. Additional impacts to the Tricolor could result from increased spraying and physical disturbance activities undertaken to control the spread of the West Nile virus.

Among the pesticides discussed in the petition is phosmet, a chemical said by the petition to be "highly toxic" in red-winged blackbirds. Phosmet is one of the organophosphate insecticides, which are moderately to highly toxic to birds. In California, the primary application of phosmet is in orchards and vineyards. The flocking behavior, choice of nesting habitat, and typical choice of feeding areas appears to minimize the risk of exposure to the Tricolor of agricultural applications of these insecticides during the nesting season. Because the Tricolor forages in mixed-species flocks with the European starling and other species of blackbirds in the non-breeding season, and because these flocks forage at dairies and/or feed lots, the Tricolor may be exposed to avicides intended to control nuisance and depredating flocks of blackbirds.

Due to the lack of specific information on the effect of agricultural contaminants, the Department cannot judge whether these chemicals pose a local or population-level threat to the Tricolor. This is an area requiring more attention."

Weather Events

The Petition includes a section entitled Storms and Droughts (beginning page 44). Hamilton *et al.* (1995) stated that high mortality of tricolored blackbird nestlings can result from severe or prolonged storms and that some observed reproductive failure may be the result of chilling of adult and nestling tricolors. Also, "some adult female mortality at nests appears to have been induced by cold and rainy weather" (Hamilton *et al.* 1995). A recent exercise by Department staff to evaluate drought risk for 358 special status taxa (species or subspecies that are listed under the federal Endangered Species Act or CESA, proposed or candidates for listing, fully protected species, or species of special concern) found the tricolored blackbird to be among those at most risk due to the ongoing drought.

Disease

The Petition includes a section on "Disease or Predation" (page 42). The Petition does not discuss any known or potential disease issues for the species. Meese *et al*. (2014) stated that no diseases have been reported for the tricolored blackbird but that in some years many nestlings have mites. Avian pox is prevalent in tricolored blackbirds in the Sacramento Valley, much less so in the San Joaquin Valley (Meese *et al*. 2014). Nationwide, blackbirds, orioles and grackles including the tricolored blackbird have been confirmed as being susceptible to West Nile Virus (WNV; www.cdc.gov/westnile/resources/pdfs/Bird%20Species%201999-2012.pdf). Adult tricolored blackbirds tested positive for WNV antibodies in 2009 but did not show symptoms of the disease (Meese *et al.* 2014). The impact of disease and parasites on breeding or wintering tricolored blackbirds is unknown.

The Department recognizes the potential for these factors to significantly affect local populations of this highly-social species.

Competition from Other Species

The Department is aware that the great-tailed grackle (*Quiscalus mexicanus*) has experienced a population expansion in California, a phenomenon which ultimately could negatively influence success of tricolored blackbird. Meese *et al*. (2014) reported that grackles may be aggressive towards nesting tricolored blackbirds but did not consider the impacts severe. White-faced ibis (*Plegadis chihi*) may destroy tricolored blackbird nests when in the process of constructing their own nests. Additionally, they are known to prey on eggs of the tricolored blackbird (Meese *et al*. 2014). Marsh wren (*Cistothorus palustris*) may destroy eggs in tricolored blackbird nests if the nest is in proximity to its own nest (Meese *et al*. 2014).

Brood Parasitism

The Petition does not include information about impacts of brood parasitism on the tricolored blackbird. The brown-headed cowbird (*Molothrus ater*) is known to rarely parasitize nests of tricolored blackbirds (Meese *et al.* 2014). The Department does not consider brood parasitism to be a major threat to the tricolored blackbird.

Killing of Blackbirds to Protect Crops

Meese (2009, 2014) discussed shooting of blackbirds to protect agricultural crops as a potential threat to the tricolored blackbird. The Petition discusses the historical lethal control of blackbirds to protect crops and considers historical poisoning and shooting of tricolored blackbirds to have contributed to the long-term decline of the species. The Petition states that continued killing of blackbirds to protect ripening rice in the Sacramento Valley is a known but unquantified source of mortality. The Department agrees that an unknown number of tricolored blackbirds are likely killed each year due to activities that are implemented to protect agricultural crops. Meese (2009) reported on the shooting of two tricolored blackbirds by a rice farmer in Butte County. A depredation order under the federal Migratory Bird Treaty Act allows for the control of several species of blackbirds and corvids in agricultural situations without a permit from the U.S. Fish and Wildlife Service (USFWS) (when birds are causing serious injuries to agricultural or horticultural crops or to livestock feed;50 CFR 21.43). Although tricolored blackbird is not covered by the depredation order, it is possible that misidentification of tricolored blackbirds when they occur in mixed flocks in the fall and winter leads to unintentional mortality of the species. The number of tricolored blackbirds killed annually is unknown. Landowners are required to report on activities and on the number of birds captured or killed under the depredation order, and a recent revision to the depredation order requires expanded reporting on non-target species (50 CFR 21.43, Nov 5, 2014). This may lead to an increase in knowledge upon which an assessment of impacts to non-target species, including tricolored blackbird, can be based.

While the Department disagrees with portions of the Petitioner's assessment of the factors affecting the tricolored blackbird's ability to survive and reproduce, the Department nonetheless concludes that the

Petitioner has submitted sufficient information to demonstrate or create a reasonable inference that tricolored blackbirds are subject to numerous threats that may have the potential to adversely affect their ability to maintain self-sustaining populations within California.

Degree and Immediacy of Threat (termed "Degree and Immediacy of Threat and Request for Emergency Action" in the Petition, beginning on page 49; also covered, in part, under the heading "Factors Affecting the Ability to Survive and Reproduce", in the Petition, beginning on page 36)

The Petition provides adequate information regarding degree and immediacy of threat under two headings as indicated above. The Department finds the following key factors pose serious threats to the tricolored blackbird:

Breeding Habitat Loss and Fragmentation: The Department believes that habitat loss and fragmentation have resulted in a decline in the population of the tricolored blackbird since the 1930s, and continues to affect the species. DeHaven (2000a) stated that, "as measured by their breeding abundance, Tricolored Blackbirds have experienced a long-term population decline which continues today. Much of this decline stems from losses of breeding habitat to urban expansion and changes in agricultural land uses. Conversions of pasturelands, both irrigated and non-irrigated, and hay crops (alfalfa and others) to vineyards and orchards has been, and will likely continue to be, one of the most damaging forms of land-use change [to the tricolored blackbird]. Because of the severe losses of habitat, which are likely irreversible, there is little likelihood that any historic population level - or indeed, even a more recent level can ever be restored and maintained". Nesting substrate at known breeding colony sites continues to be lost on a regular basis; statewide survey participants regularly report on loss of nesting substrate when visiting historical breeding locations.

Loss of Upland Foraging Habitat: Because of their colonial breeding nature, foraging habitats that support highly productive insect populations are required for successful reproduction. For much of the year, adult tricolored blackbirds feed mainly on grains and other plant seeds (Crase and DeHaven 1978). However, females require large amounts of insect prey for egg production and both sexes provision young with insects during at least the first nine days of development (Crase and DeHaven 1977). Colonies consisting of many thousands of birds require an immense amount of insect prey during short windows of time, putting a large burden on the landscape surrounding the colony. Habitats that can support high insect production include grasslands, pasture, and certain agricultural crops. These land cover types are regularly converted to incompatible land cover types such as orchards, vineyards, and urban development as agricultural practices evolve and cities continue to expand in the Central Valley. With regular loss of breeding substrate and foraging habitat, the co-occurrence of these essential habitat requirements across the landscape becomes less and less common, resulting in limited places where tricolored blackbirds can successfully breed.

The Department was not able to thoroughly examine information on conversion of suitable breeding and foraging habitat to unsuitable land cover types. The degree to which urbanization and conversion of

compatible agricultural land to incompatible crop types continues to impact the species has not been assessed. This area requires additional review and analysis.

Loss of Reproduction to Triticale Harvest: The Department believes that the use by the tricolored blackbird of agricultural fields, where reproduction often fails due to human activities and to increased predation, may be contributing to the population decline. When other habitat is unavailable, agricultural fields may provide attractive alternative habitats for breeding and/or foraging. DeHaven (2000b) wrote, "Today, a new phenomenon – [tricolored blackbird] nesting in grain silage fields of dairies – has emerged. Unfortunately, such fields are often subject to harvest (done in relation to moisture content of the forage) while nesting tricolored blackbirds are still present. This may cause both nest destruction and direct mortality". The tricolored blackbird experiences "losses [of reproductive effort] to crop-harvesting activities and insufficient insect food and suffer habitat losses to land conversions from rangeland to vineyards, orchards, other agricultural crops and urban development" (Meese *et al*. 2014). In the 2000 survey, Hamilton (2000) found that over 90% of all tricolored blackbird observed foraging activity was on private property. Hamilton (2003) wrote that his "measurements of reproductive success (mean number of fledglings per successful nest, per colony) reveal huge population sinks that may be depleting tricolor numbers. Massive reproductive failures in the agricultural fields of the San Joaquin Valley in particular suggest that the reproductive potential of this species may be swamped by losses to agricultural harvesting practices. This relationship is exacerbated by the attractiveness of productive agricultural habitats to breeding tricolors despite repeated reproductive failures". Cook and Toft (2005) found that reproductive success varied among nesting substrates and that significantly more offspring were fledged per nest in non-native Himalayan blackberry and that many occupied sites have been lost in recent years. They concluded that silage colonies, when not destroyed by harvest, fledge more young per nest than do native marsh habitat and that this recruitment could be considerable and play a large role in stabilizing the population.

Of the nesting substrates used by tricolored blackbirds, triticale is unique in that it is available in abundance each year in the San Joaquin Valley, and in recent years, many of the largest colonies have occurred on triticale fields. The increase in dairies in the San Joaquin Valley and the associated expansion of triticale fields may have contributed to a shift in the center of population abundance from the Sacramento Valley to the San Joaquin Valley over the last few decades. The breeding season corresponds to the period of harvest for the triticale crop, and many colonies are disturbed each year due to the harvest of the nesting substrate before the nesting cycle is completed. Harvesting destroys the nests and any eggs or young present in the nests, often resulting in zero productivity for the nesting effort. Fifty percent of the breeding tricolored blackbirds detected in California in 2008 were observed nesting in triticale fields during the 2008 statewide survey (Kelsey 2008).

Low Reproductive Success: Recent research has shown that most of the larger tricolored blackbird colonies in the Central Valley exhibited chronically low reproductive success from 2006 to 2011 (Meese 2013), even at sites not harvested during the breeding period. Incidental observations in 2012 and 2013 suggest that this trend has continued. Meese (2013) linked reproductive success at Central Valley colonies to relative abundance of insect prey at foraging sites. Insect prey availability may be suppressed by drought, changes in surrounding vegetation, or by application of pesticides. Regardless of

cause, low insect abundance near colonies in the Central Valley appears to have resulted in very little reproductive output from the largest colonies in the state, at least in recent years. The limited reproduction at the largest colonies over a seven year period has likely resulted in an age structure skewed toward older adults. The maximum life span observed in tricolored blackbirds is 12 years (Meese *et al.* 2014), and much of the current population may be approaching or exceeding the average life span.

Predation: The Department believes that predation is a threat to the success of some tricolored blackbird nesting colonies. Small areas of native vegetation are recognized to be especially vulnerable to predation, especially if they are near sites at which predator populations are at artificially-high levels due to the availability of augmented food sources from human activities.

While the Department disagrees with portions of the Petitioner's assessment of the relative degree and immediacy of threats to the tricolored blackbird, the Department nonetheless concludes that the Petitioner has submitted sufficient information to demonstrate or create a reasonable inference that the threats tricolored blackbirds are subject to have the potential to adversely affect their ability to maintain self-sustaining populations within California.

Impact of Existing Management Efforts (in the Petition, beginning on page 50)

The Petition presents information on existing efforts as well as past attempts to manage or conserve the tricolored blackbird.

Silage Buy-outs and harvest delays

The Petition states that the existing but intermittent practice by the USFWS and the Department, to purchase agricultural crops in which the tricolored blackbird is nesting, is not adequate to prevent the loss of tricolored blackbird colonies. The USFWS has contributed funding for crop payment in several years. The first such purchases were in 1993 and 1994, preserving several large colonies in Fresno, Kings, and Tulare counties. Earlier, in 1992, interested persons intervened to prevent destruction of tricolored blackbird colonies by agricultural operators. Hamilton *et al.* (1995) calculated that interventions in 1992, 1993, and 1994 may have been responsible "for the presence of over 75,000 adult Tricolored Blackbirds in 1995 [which had been nestlings in the three previous years], about 25% of the known population". One or both of the wildlife agencies and/or the Natural Resources Conservation Service (through the Delayed Silage Harvest EQIP program in 2012-2014) have contributed to crop purchases/harvest delay in each year from 1999 through 2014. In 2004, silage purchases by the Department and USFWS protected three colonies totaling over 100,000 adult tricolored blackbirds. From 2005-2009, silage buy-out and/or harvest delay contributed to the productivity of the species, varying annually. During this time period, 11 breeding colonies consisting of 546,000 birds subsequently produced 396,025 young through this process (Meese 2009b).

DeHaven (2000a) questioned the biological value (to the tricolored blackbird) of having State and federal agencies pay dairies to delay or forgo silage harvesting in fields in which the tricolored blackbird is nesting. DeHaven (2000b) commented that providing monetary payments to dairies "sets an

undesirable precedent". He recommended that tricolored blackbirds be lured away from nesting in grain and silage fields through "making key San Joaquin Valley dairy silage fields less attractive to breeding tricolored blackbirds; and providing alternative, low-risk nesting substrates in these areas" (DeHaven 2000b).

Tricolored Blackbird Working Group

Following the 1991 petition to list the tricolored blackbird under CESA, the Department committed to participation on a multi-stakeholder working group to plan for and implement conservation actions. This resulted in the first of many statewide surveys, the first silage buyout to protect a breeding colony, and ongoing research. However, the working group made limited progress in developing comprehensive conservation measures for the tricolored blackbird and eventually dissolved in the mid-1990s. In 1997, a status update and management guidelines for the tricolored blackbird was completed as per Department and USFWS guidance (see Beedy and Hamilton 1997). The species was again petitioned to be listed under CESA in 2004. The petition evaluation report by the Department stated there was sufficient information to indicate the petitioned action may be warranted; the Commission voted to reject the petition (Fish and Game Commission meeting, Feb. 3, 2005). A new multi-stakeholder Tricolored Blackbird Working Group was formed in 2005 and the group released a conservation plan in 2007 detailing the conservation and management, research and monitoring, data management, and education and outreach goals for the species (TBWG 2007). Working group members, including the Department, signed a Memorandum of Understanding (agreeing to implement the actions in the conservation plan. Most of the goals and objectives in the plan are still relevant today. Progress toward meeting objectives by Department, USFWS, and partners on the working group have focused on expanding knowledge through research and protecting large breeding colonies that are threatened by harvest of triticale fields. New information gathered during many years of research can inform the modification of specific tasks, but the broader goals in the conservation plan remain relevant. The tricolored blackbird has been a high priority California Species of Special Concern since the list was revised in 2008 and the Department has continued to pursue conservation actions for the species.

Among the conservation and management goals in the 2007 Conservation Plan for the Tricolored Blackbird, the goal to "*Protect silage-nesting tricolors until sufficient, permanent breeding habitat is available to maintain viable self-sustaining populations*" is considered to be a near-term need until adequate natural habitats can be protected or restored and tricolored blackbirds are no longer dependent on silage crops. With the declining population and the continued use of triticale by large colonies, this goal remains a high priority. The state and federal governments have provided funding to implement voluntary efforts to compensate willing farmers for delaying harvest until after the breeding season. These efforts have resulted in the protection of several large colonies, but colonies continue to be lost to harvest. Although protection of breeding colonies does not represent a permanent solution to the loss of colonies to harvest, it has resulted in the protection of hundreds of thousands of nests. Without these protective measures, the population likely would have experienced even more dramatic declines in recent years.

The long-term goal to "*Protect, create, restore, and manage habitats needed to support viable, self-sustaining populations of tricolors*" is considered to be of highest priority for species conservation (N. Clipperton, pers. comm., based on priority setting exercise at May, 2014 Tricolored Blackbird Working Group meeting). Some progress has been made on implementing this goal, including an assessment of opportunities for enhancing habitat on Department-owned lands, incorporating the needs of multiple species, including tricolored blackbirds, into habitat incentive programs for private lands, and management of wetland habitat on Department and National Wildlife Refuge lands to benefit nesting tricolored blackbirds. Until more extensive habitat restoration and protection of both nesting substrate and high quality foraging habitat can be achieved, the population will likely remain small and ongoing efforts to protect colonies on agricultural fields will likely need to be continued.

Species of Special Concern

The Department issued the first Bird Species of Special Concern in California report in 1978 (Remsen 1978). Although the tricolored blackbird was not included on the special concern list, it was recommended for further study to determine whether the decline of the tricolored blackbird noted by DeHaven *et al.* (1975a) was continuing. After further decline of population numbers in the 1980s, the Department added the tricolored blackbird to its list of Bird Species of Special Concern in 1990. The most recent revision of the list found the tricolored blackbird merited inclusion in the highest conservation category (Shuford and Gardali 2008).

While the Department questions portions of the Petitioner's assessment of the impacts of existing management efforts, the Department nonetheless concludes that the Petitioner has submitted sufficient information to demonstrate or create a reasonable inference that those management efforts may not be adequate to maintain self-sustaining populations in California.

Suggestions for Future Management (in the Petition termed "Recommended Management and Recovery Actions", beginning on page 54)

The Petition contains specific suggestions for the future management of the tricolored blackbird (Beedy 2014, Meese 2014). The Department believes these recommendations and others (e.g., Beedy and Hamilton 1997, Hamilton *et al.* 1999, DeHaven 2000a, DeHaven 2000b, Hamilton 2003, TBWG 2007, Beedy 2008) should be carefully considered, evaluated for efficacy and prioritized for implementation.

The Tricolored Blackbird Conservation Plan (TBWG 2007) included many of the following management and research recommendations:

1. Incorporate population and habitat conservation actions for the Tricolored Blackbird in habitat conservation plans, natural community conservation plans, and other multispecies conservation plans and in ongoing private land agricultural and conservation easement programs.
2. Restore habitat by promoting the growth of secure nesting substrates (e.g., nettles, thistles, and other naturally armored native plants) near productive foraging habitats to increase the potential carrying capacity for this species. Restored nesting habitats should be situated on

protected public and private lands, especially in agricultural areas of the Central Valley and surrounding foothills.

3. On refuges and other public lands that support Tricolored Blackbird colonies in irrigated pastures, manage irrigation to permit a sequential flooding regime in adjacent land parcels at the time they are breeding to enhance insect productivity. Incorporate carefully managed grazing of these parcels to maintain an average vegetation height of 15 cm to provide optimal Tricolored Blackbird foraging habitat.
4. Lure nesting Tricolored Blackbirds, when possible, away from dairies and other agricultural operations to secure habitats where they are more likely to succeed; where colonies establish, defer harvest of grain and silage crops, if feasible, until after the breeding season.
5. Investigate predator-prey relationships, especially the ongoing effects of black-crowned night-herons and coyotes and the responses of individuals and colonies to predators.
6. Perform demographic research to determine whether reproductive success of freshwater marsh colonies varies with respect to wetland size and spatial relationships with other wetlands.
7. Analyze depletion of food resources by blackbirds near breeding colonies and quantify the extent and character of foraging habitats near colonies.
8. Evaluate habitat selection mechanisms and the relative value of alternative foraging habitats to breeding birds.
9. Use banding and radiotelemetry to measure adult and juvenile dispersal from several colonies.
10. Evaluate the distribution, resource utilization, and survival of wintering birds.

Finally, spatial analyses to estimate losses in nesting substrate or foraging habitat have not been conducted. Data have not been systematically collected, but incidental observations during species surveys are available and could inform an analysis of recent changes in extent and distribution of nesting substrate. Agriculture land use data for the Central Valley could be used to estimate changes in foraging habitat over time (e.g. DWR land use data; http://www.water.ca.gov/landwateruse/lusrvymain.cfm).

Habitat Necessary for Survival ("Kind of Habitat Necessary for Survival" in the Petition, beginning on page 30)

The Petition describes the existing situation in which the tricolored blackbird nests in native vegetation, introduced vegetation, and crops. For successful breeding, tricolored blackbirds require nesting substrate, a water source, and an extremely abundant insect food source in proximity to the breeding colony. Historically, tricolored blackbirds nested in natural wetlands of the Central Valley and in a few native upland plant species; early declines in the population most likely resulted from declines in this natural habitat. As extensive wetlands and other native substrates were lost, tricolored blackbirds expanded use to alternative nest substrates, including nonnative upland plants such as Himalayan blackberry, milk thistle (*Silybum marianum*), and the agricultural crop triticale, which is grown as a food source for dairy cattle. Historically, most colonies were in freshwater marshes. Meese *et al.* (2014) wrote that, historically, "almost 93% of 252 breeding colonies observed in the Sacramento Valley, from 1931 to 1936, were in freshwater marshes dominated by cattails (*Typha* spp.) or bulrushes (*Schoenoplectus* spp.); remaining colonies were in willows (*Salix* spp.), blackberries (*Rubus* spp.), thistles

(*Cirsium* and *Centaurea* spp.), and nettles (*Urtica* sp). By the 1970s, DeHaven *et al.* (1975a) found that only 53% of colonies in the Sacramento and San Joaquin valleys were in cattails and bulrushes. Since at least the 1970s, the breeding habitat of the tricolored blackbird has included upland and agricultural areas (DeHaven *et al.* 1975a, Beedy *et al.* 1991). Hamilton (2003), citing Kreissman (1991 - not examined), wrote that "most Central Valley grasslands are now gone, lost to cattle rangeland, irrigated crops (pasture, row crops, orchards, rice , grapes) and development. Modern tricolor habitats are agricultural land, especially rice and nearby duck club cattail and bulrush marshes, dairies and their associated hay fields and cattle rangeland wherever there is suitable nesting habitat and water". Hamilton (2003) stated that "Tricolored blackbird colony sites require nesting substrates offering protection from predation. These include emergent marsh vegetation (cattails, *Typha latifolia*, less frequently *T. angstifolia*), bulrushes (*Schoenoplectus californicus, S. acutus*) and Himalayan blackberries (*Rubus discolor*) thickets, thistle, and nettles. Tricolored blackbirds do not settle in grain, hay, silage, or cut-feed fields before grain forms seed awns or spiny or prickly weeds develop in them. We assume that grain fields are identified as spiny vegetation by tricolors".

The Department concludes that the Petitioner has submitted sufficient information to describe the habitat needs for tricolored blackbird.

Distribution Map

The distribution map included in the Petition on page 61 contains a sufficient illustration of the California breeding and winter ranges of the tricolored blackbird. The Department further recommends assessment and incorporation of other existing data sets (e.g., eBird, California Natural Diversity Database, Christmas Bird Count, Breeding Bird Survey) which may have additional tricolored blackbird records into the distribution map.

Availability and Sources of Information (in the Petition, beginning on page 57)

The Petition includes most of the major references on the tricolored blackbird.

CONCLUSIONS

The tricolored blackbird is the most colonial land bird in North America and nearly is endemic to California, with more than 99% of the total breeding population in the State. As a colonial breeder, the tricolored blackbird nests in a small number of larger colonies comprising a significant proportion of the population. The concentration of a high proportion of the total population at a few sites increases the risk of a catastrophic effect on the species as a whole, due to nesting failure in, or destruction of, a single large colony.

At least three major factors have operated, and continue to operate, to reduce the population of the tricolored blackbird. These major threats to the tricolored blackbird are as follows:

<u>Loss and Fragmentation of Habitat:</u> This factor appears to be the most serious one threatening the tricolored blackbird. The availability of suitable nesting and foraging habitat, including food resources,

appears to limit the population. Local declines across the range of this species over time apparently have cumulatively resulted in the decline in tricolored blackbird numbers since the 1930s. The loss of habitat continues, both in the Central Valley and in southern California. As the amount of habitat is reduced through human activities, the tricolored blackbird population likely will continue to decline.

Agricultural Operations: The shift in breeding habitat use by the tricolored blackbird from native habitats to silage and grain fields makes these colonies vulnerable to destruction during crop harvest. Nest abandonment also can result from the disturbance of nearby human activities.

Predation: Predators attack colonies of any size but are especially effective in reducing or eliminating the reproductive effort of small colonies in remnant native vegetation such as cattails. Predation can have a significant effect on the reproductive success of tricolored blackbird breeding colonies.

Having reviewed and evaluated relevant information, including the material referenced in the Petition and other information in the Department's possession, the Department believes there is sufficient scientific information available at this time to indicate that the petitioned action may be warranted. (See Fish & G. Code, § 2073.5, subd. (a)(2); Cal. Code Regs. tit. 14, § 670.1, subd. (d).)

Preparers

Prepared by Neil Clipperton and Lyann A. Comrack, Wildlife Branch, California Department of Fish and Wildlife, Sacramento. March 2015.

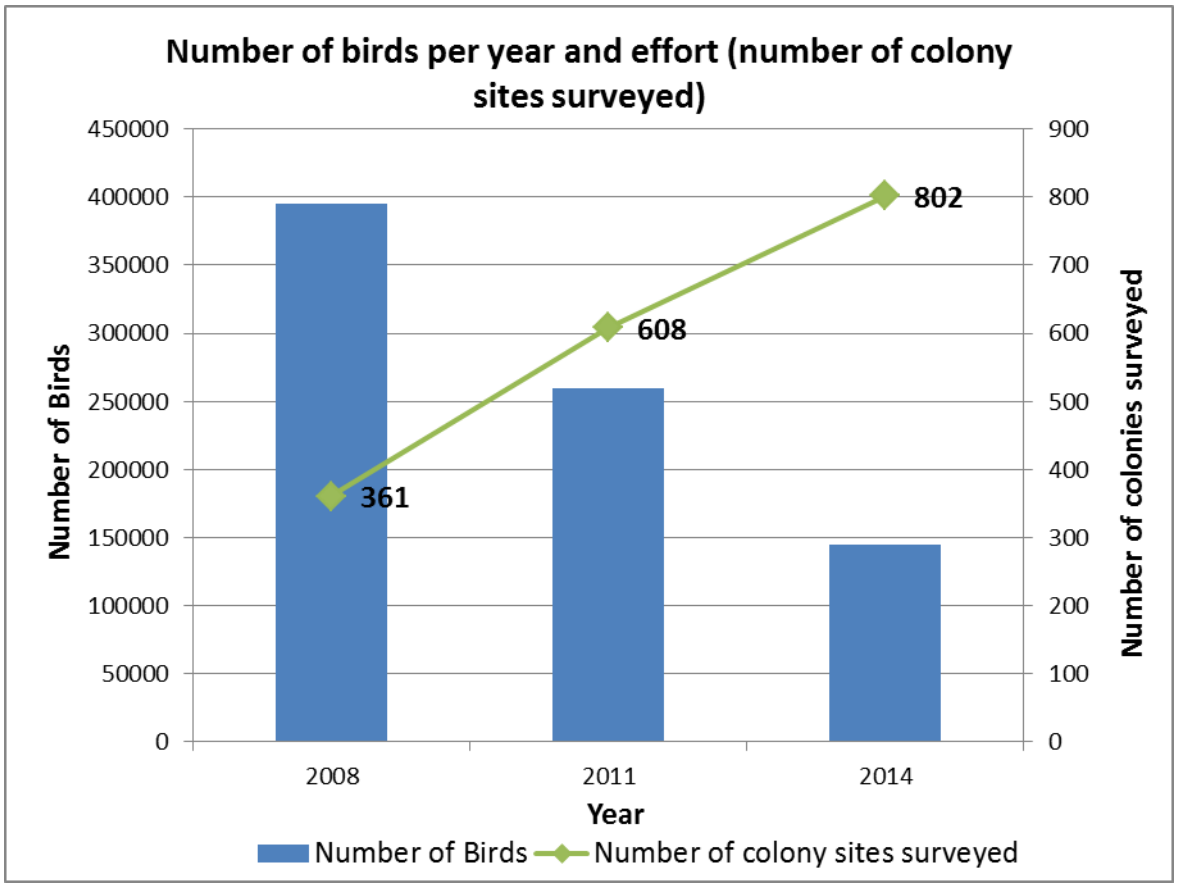

Figure 1. Number of birds detected per year during statewide surveys, and number of colony sites surveyed during each survey.

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From:	Audubon California on behalf of Daniela Ogden
To:	FGC
Subject:	Speak up for California"s Tricolored Blackbirds
Date:	Friday, April 03, 2015 8:33:50 PM

Apr 3, 2015

Mr. Sonke Mastrup
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Dear Mr. Mastrup,

I am writing to encourage the Fish and Game Commission to advance the Tricolored Blackbird as a candidate for protection under the California Endangered Species Act.

A recent survey conducted by UC Davis with the support of Audubon California and the California Department of Fish & Wildlife counted 145,000 Tricolored Blackbirds remaining in California, down from 260,000 in 2011. This 44 percent drop in population led to the emergency listing in December 2014. While recent partnerships between Audubon California, agricultural groups, and government agencies like Natural Resources Conservation Service are working to save Tricolored Blackbird colonies, it is clear that further help is needed to save the species from extinction. We must maintain full protections for this species and consider it a candidate for listing under regular California Endangered Species Act procedures.

Thank you so much for allowing me to speak in support of the possible listing of the Tricolored Blackbird.

Sincerely,

Ms. Daniela Ogden
[redacted]

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MCS

April 4, 2015

Sonke Mastrup
Executive Director
California Fish and Game Commission
P.O. Box 944209
Sacramento, Ca. 942444-2090

Re: The Tri-Colored Blackbird

Dear Sonke Mastrup,

I have lived in the San Joaquin Valley for more than 35 years and have appreciated the beauty of the Tri-Colored Blackbird in the sweeping flocks I remember from my youth. Traveling and living in the valley, I have been saddened by the loss of habitat that has led to the shocking decline in numbers of this beautiful creature. As you know, there has been a 44 percent drop in the "trike" population.

I'm a believer in the conservation group Audubon California and have contributed funds to help support habitat for the Tricolored Blackbird, but realize that more must be done to protect the bird from extinction. I never saw the passenger pigeon before it was driven to extinction, and I fear that in my lifetime the Tricolored Blackbird will disappear if California does not act.

I'm asking the commission to consider the Tricolored Blackbird as a candidate for listing under California Endangered Species Act procedures.

Thank you for your consideration and support of this bird and its protection.

Sincerely yours,

Joan Swenson

Joan Swenson

San Bernardino Valley Audubon Society

P. O. Box 10973, San Bernardino, California 92423-0973

April 8, 2015

Fish and Game Commission
1416 Ninth Street, Room 1320,
Sacramento, CA 95814

By email to fgc@fgc.ca.gov

SUBJECT: Petition from the Center for Biological Diversity ("CBD") to list the Tricolored Blackbird (*Agelaius tricolor*) as an Endangered Species under the California Endangered Species Act (pursuant to Section 2073.3, Fish and Game Code) to add Tricolored Blackbird (*Agelaius tricolor*) to the list of Endangered Species (pursuant to Section 2076.5, Fish and Game Code).

Dear Commission Members,

The San Bernardino Valley Audubon Society ("SBVAS") is a non-profit 501(c)(3) corporation and a local chapter of the National Audubon Society with about 2000 members. In spite of its name, the chapter covers almost all of San Bernardino and Riverside counties. SBVAS is an educational and public interest environmental organization. Its mission is to help educate the public as to the importance of the natural environment, and to preserve habitat for birds and other wildlife.

We strongly urge the members of the Commission accept the recommendation of the California Department of Fish and Wildlife, that the petition by the Center for Biological Diversity to list the Tricolored Blackbird (*Agelaius tricolor*) as an Endangered Species under the California Endangered Species Act be accepted. Our chapter area includes most of the more southerly habitat for this species, which is mostly endemic to the state of California. Our members have been regular participants in the Tricolored Blackbird population counts cited in the CBD Petition. The chapter has participated in efforts to save nesting colonies in farmers' fields, sometimes successfully, sometimes not. We are leading efforts to conserve and enhance Tricolored Blackbird habitat in our chapter area.

The population counts clearly show that this bird is on its way to extinction in just a few years. Between 2008 and 2011, the population dropped from 394,858 to 259,322, a decline of 34% in the population in just these three years, and a loss of an average of 45,179 birds per year. Between 2011 and 2014, the population dropped from 259,322 to 145,135, a decline of 44% in the population in these three years, and a loss of an average of 38,062 birds per year. Projecting these numbers as a straight-line decline – which hopefully will not occur – the Tricolored Blackbird will be extinct in the state in about 2018. (145,135 birds total divided by a loss of 38,062 birds per year = 3.8 years left.)

This straight-line projection is justified by the fact that while the loss of individuals per year went down between 2011 and 2014 compared to 2008 to 2011, the percentage of loss went up.

The first factor would cause the projection line to be less steep – meaning a later extinction – while the second factor would cause the projection line to be steeper - meaning an earlier extinction. These factors seem approximately equal and thus would essentially cancel each other out. We know from historical examples that remnant populations can persist in favorable localities, but such species are not healthy as species and we cannot assume that such a remnant population will survive.

Our own local observations over the recent decades mirror this precipitous decline. To cite just one comparison among dozens, in 2006 Audubon was able to save a field of about 5,000 Tricolored Blackbirds that had nested in a farmer's field just south of the San Jacinto Wildlife Area by buying the crop. The flock, discovered by the then manager of the San Jacinto Wildlife Area, was able to raise its young until they fledged. In 2013, Audubon was unable to save a flock of Tricolored Blackbirds nesting in almost the same place. This time the flock was estimated at between 1,000 and 2,000 birds.

In sum, with precipitous population declines throughout the state, the Tricolored Blackbird is headed for extinction in the near future and needs the full protection of the California Endangered Species Act. We therefore strongly urge the members of the Commission to accept the CBD petition to list the Tricolored Blackbird (*Agelaius tricolor*) as an Endangered Species under the Act.

Sincerely,

Drew Feldmann
Conservation Chair

VIA E-MAIL AND FIRST CLASS MAIL

March 20, 2015

Charlton Bonham, Director
California Department of Fish and Wildlife
1416 9th Street, 12th Floor
Sacramento, CA 95814

Re: Written Evaluation of Petition to List Tricolored Blackbird

Dear Director Bonham:

This letter is prepared and submitted by Dairy Cares, a coalition of California's dairy producer and processor organizations, including the state's largest producer trade associations (Western United Dairymen, California Dairy Campaign, Milk Producers Council, and California Farm Bureau Federation) and the largest milk processing companies and cooperatives (including California Dairies, Inc., Dairy Farmers of America-Western Area Council, Hilmar Cheese Company, and Land O'Lakes, Inc.) and other affiliates, such as California Cattlemen's Association. Formed in 2001, Dairy Cares is dedicated to promoting the long-term sustainability of California dairies. The coalition represents California's more than 1,500 dairy farms.

Joining us in support of this letter are the California Chamber of Commerce, California Building Industry Association, and California Waterfowl Association. Together, we are writing to oppose the petition submitted by the Center for Biological Diversity to list the tricolored blackbird as an endangered species under the California Endangered Species Act (Fish & G. Code, § 2050 et seq.) and request that the Department of Fish and Wildlife ("Department") recommend that the petition be rejected. We have attached, and incorporate by reference, a letter submitted to the U.S. Department of the Interior and U.S. Fish and Wildlife Service opposing a petition submitted to those entities seeking to list the tricolored blackbird under the federal Endangered Species Act.

The petition is unprecedented in that: (1) it asks the Fish and Game Commission ("Commission") to list the tricolored blackbird on the basis of survey data that do not constitute a census of the species and that are subject to substantial margins of error, (2) it relies on periodic annual surveys that actually indicate that the species is now more abundant than it was at times

during the period from 1969 to 1999, and about equally abundant as it was when surveys were conducted in 2000 and 2001, and (3) it seeks to list the species despite the fact that it is widely distributed across nearly 40 California counties, a contemporary range that mimics the species' historical distribution. Further, the petition is unique in that – if granted – it may well pose a greater threat to the species than the status quo by incentivizing farmers to alter existing agricultural practices that provide the species with essential nesting habitat in pastures and on cultivated lands that constitute a material proportion of the overall habitat of the species. In light of these facts and publicly available scientific information regarding the tricolored blackbird, the Department should recommend rejecting the petition because it fails to show that designating the species as a candidate is warranted at this time.

The Department's Charge under CESA

The Department is preparing its written evaluation of the petition to the Commission consistent with Fish and Game Code section 2073.5(a). The evaluation is to be based on the petition and other relevant information the Department possesses or receives. Id. In addition, it must be accompanied by a recommendation that the petition should be rejected or accepted and considered. Id.

The recommendation is intended to inform the Commission's determination whether listing as threatened or endangered "may be warranted." Fish & Game Code § 2074.2. Caselaw clarifies that a species does not qualify for candidate status if there is not sufficient information that would lead a reasonable person to conclude that the petitioned action may be warranted. *Natural Resources Defense Council v. Fish and Game Commission* (1994) 28 Cal.App.4th 1104, 1119; *see also Center for Biological Diversity v. Fish and Game Commission* (2008) 166 Cal.App.4th 597. In light of the foregoing, the Department and Commission cannot blithely accept assertions in a listing petition. Rather, both have the legal obligation to evaluate the information in the petition and other available information and determine whether the petition's claims are accurate and credible. 28 Cal. App. 4th at pp. 1119, 1125. The "may be warranted" finding in section 2074.2 requires a determination that there is a "substantial possibility" that the petitioned action is warranted. *Id*.

The petition in this instance proposes to list the tricolored blackbird as endangered. In light of the definition of "endangered" in the California Endangered Species Act, that is, "in serious danger of becoming extinct throughout all, or a significant portion, of its range," the Department and Commission are required to determine that there is a substantial possibility that the tricolored blackbird is in serious danger of becoming extinct in the foreseeable future. Fish & Game Code § 2062.

The Department's written evaluation must address each of the following petition components:

(A) population trend;
(B) range;
(C) distribution;
(D) abundance;
(E) life history;

(F) kind of habitat necessary for survival;
(G) factors affecting the ability to survive and reproduce;
(H) degree and immediacy of threat;
(I) impact of existing management efforts;
(J) suggestions for future management;
(K) availability and sources of information; and
(L) a detailed distribution map.

Cal. Code Regs., tit. 14, § 670.1(d)(1).

Trend, Range, Distribution, and Abundance of the Tricolored Blackbird

The foundation of the petition is the assertion that the population of the tricolored blackbird has experienced a dramatic decline from millions of birds a century ago to a mere 140,000 as of 2014. Allegations are made regarding a downward trend, a reduced range, purported adverse changes in distribution, and long-term and recent declines in abundance. We address all of these factors – which the Department is required to consider in its written evaluation – in our letter to the U.S. Department of the Interior and U.S. Fish and Wildlife Service, which has been copied to the Department. Rather than replicate our analysis of the petition to the federal government and publicly available scientific information here, we have attached the letter and incorporate it by reference.

The petition to the Department makes much of an apparent decline in tricolored blackbirds at sites surveyed from nearly 400,000 in 2008 to roughly 145,000 birds in 2014. Individual survey returns were combined by summing "best estimates" subject to adjustment by Robert Meese (U.C. Davis) in circumstances where he visited the survey site (Meese 2014; Kyle and Kelsey 2011; Kelsey 2008). Those summed data are set out in Figure 1.

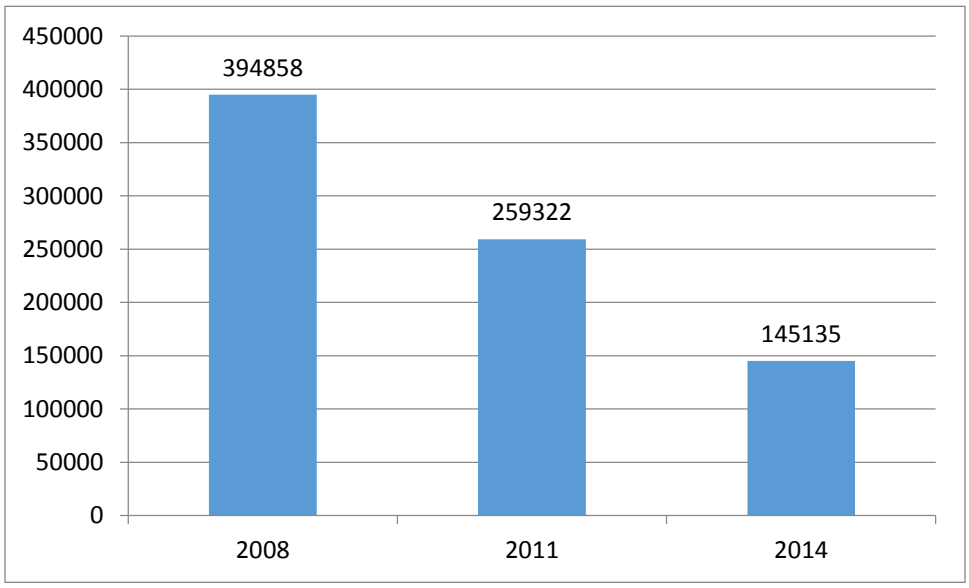

Figure 1 – Population size estimates from 2008, 2011, and 2014.

The recent annual population estimates are within the ranges of annual counts dating back to the 1960s (and even further), and show similar inter-year variation, much of which may be ascribed to estimation error, as discussed below. We describe counts conducted by Neff with the federal Bureau of Biological Survey in the 1930s in the letter to the U.S. Department of the Interior and U.S. Fish and Wildlife Service (and see Neff 1937). The 90-day finding by the U.S. Fish and Wildlife Service in 2006, determining that the petition filed at that time did not present substantial scientific or commercial information to indicate that listing the tricolored blackbird may be warranted, states that "Neff estimated between 95,000 and 737,000 breeding birds for the 5-year timeframe" in the 1930s (71 Fed. Reg. 70,483, 70,487 (Dec. 5, 2006)).

Surveys intended to assess the status of the species were not undertaken again until the late 1960s (DeHaven et al. 1975). Over the subsequent 45-year period, sporadic surveys were conducted (Beedy et al. 1991, Beedy and Hamilton 1997, Green and Edson 2004; Hamilton et al. 1999, Hamilton 2000, Humple and Churchwell 2002, Kelsey 2008, Kyle and Kelsey 2011). The reported estimated number of tricolored blackbirds from surveys in 2014 does not reflect a precipitous decline; instead, the estimate falls well within the range of estimates dating back 45 years (Figure 2), and is not inconsistent with numbers reported in the 1930s. Rather than a monotonic decline in blackbird numbers over decades, *survey results illustrate that the high estimate of birds statewide occurred as recently as 2008, and place the 2014 estimate well within the range of estimates for the period 1969 to 2014*.

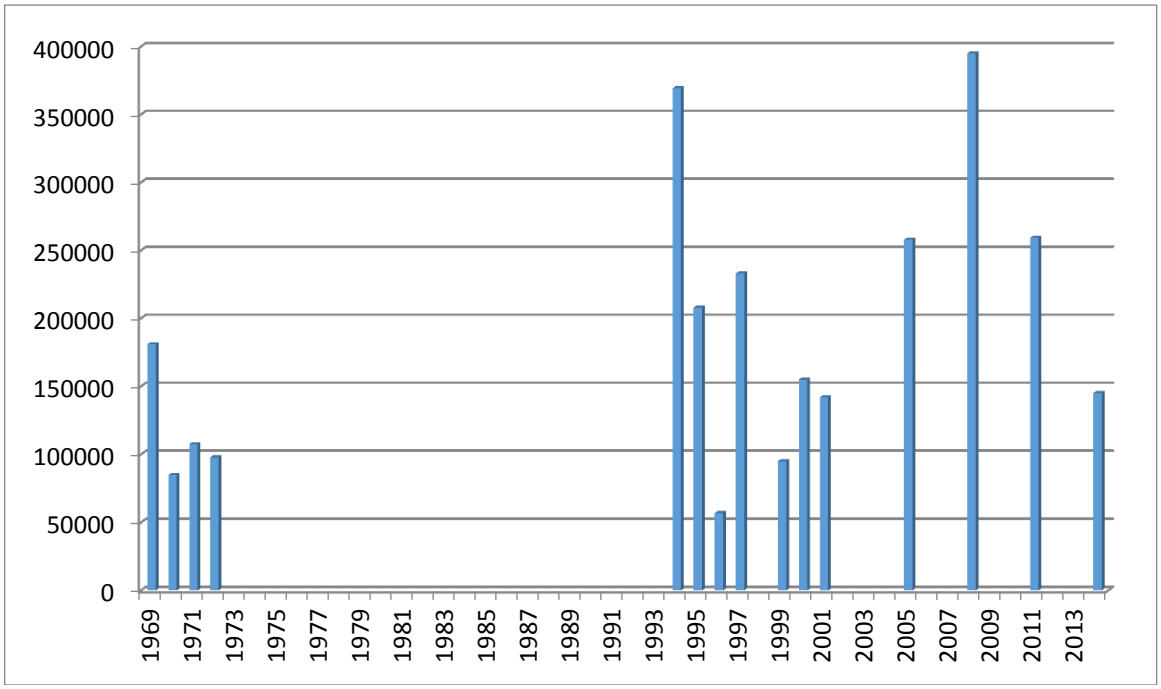

Figure 2 – Population size estimates historical survey reports.

Habitat Necessary for Survival

The ability of the tricolored blackbird to use agricultural and other "disturbed" landscape cover types, its propensity to adapt to newly established nesting substrates in non-native plants, and its documented use of insects and grains as forage is essential to understanding the contemporary status of the species and interpreting the sizes and distribution of its colonies. The petition in substance and tone misrepresents an essential attribute of the relationship between tricolored blackbirds and the evolving California landscape. The species' expansive pre-settlement wetland habitats, which offered nesting substrates in tules (cattails or bulrushes) over shallow waters adjacent to foraging areas rich in invertebrates and ripening native grains, are mostly gone. For a species less adaptable than the tricolored blackbird, that loss of habitat would have led to its disappearance. But in sustained numbers well in excess of 100,000, the tricolored blackbird continues to thrive across the state. It has exhibited the capacity to utilize wetlands in their contemporary circumstances on a much more limited spatial scale than was available historically and with limited opportunities for nearby foraging. *The bird's larger colonies are now disproportionally represented in agricultural settings, where drier, upland circumstances support nests in invasive plants and cultivars, and foraging frequently occurs in adjacent pastures and croplands* (Graves et al. 2013, Cook and Toft 2005).

The tricolored blackbird is not completely relegated to managed and disturbed areas of the landscape, but shows preference for landscape situations that were only beginning to become available a century ago and started to proliferate just 50 years ago. Even then Gordon Orians, the National Academies scientist who started his career studying blackbirds, presciently described the tricolored blackbird's circumstances a half century later – "Today in the Great Valley dams and levees have virtually eliminated extensive winter flooding, most of the vast marshes have been drained, and the alkali flats and prairies are now under cultivation, so that it might be expected that the Tricolored Blackbird, its system no longer adapted to present-day conditions, would be in danger of extinction … [h]owever, the attributes of the social system which adapted it to former conditions have actually pre-adapted it to agriculture" (Orians 1961:309). The tricolored blackbird is not a survivor needing protection on the margins of California's settled landscape, but is a well-adapted denizen of available anthropogenic habitats.

Factors Affecting Ability to Survive and Reproduce

Much is made in the petition of the declining sizes of larger colonies of tricolored blackbirds over time (CBD 2014:16-17). That assertion must be viewed with consideration that colony-size estimates are *least* reliable at the upper end; and colony-size inferences may include unstated errors of up to one-half or more of their numerical estimates. Moreover, each of the recent three triennial statewide counts is greatly influenced by estimates of the sizes of a very few large colonies. Those estimates are themselves rough and apparently subject to substantial uncertainty. Records from a colony site that accounted for the largest number of birds recorded in the Sierra Nevada foothills in a statewide survey report by one of the most reliable volunteer surveyors (available at http://tricolor.ice.ucdavis.edu/content/ urncatalogicetrbl7162) described the site as supporting 12,000 tricolored blackbirds, with an estimated minimum of 10,000 birds and estimated maximum of 15,000 birds in late April 2014. In a revisit 13 days later with R. Meese, the surveyor reported that the site supported numbers "similar to those on previous

counts over the past several weeks," however, after discussion with Meese the estimate was dropped to 8,000 (6,000 minimum, 10,000 maximum). The implications of "sampling error" of this magnitude realized across the larger colonies of tricolored blackbirds are immense when set in the context of the reported near-term statewide trends for the bird. If error estimates are on the order of 50 percent (as the example implies), the statewide numbers reported for 2008 and 2011, and for 2011 and 2014, might well be equivalent.

The petition's lack of acknowledgement of the rough estimation techniques used in the contemporary tricolored blackbird surveys serves to confer a heightened and undeserved level of rigor to the reported "annual" population estimates (CBD 2014:11). Based on banded-bird observations, inference, and some genetic information, the tricolored blackbird can be viewed as existing in California as a single population, distributed across the entire state, including both the extensive area north of the Tehachapi Mountains, and the more circumscribed sub-coastal areas in the south of the state. Available data do not support and the petition incorrectly asserts that the population of tricolored blackbirds in California has declined, or declined precipitously, over the past several decades. Data from multiple sources indicate otherwise. Critical consideration of survey returns since the 1960s indicate that lower numbers of tricolored blackbirds were recorded in years prior to year 2000, and as noted above, the highest recorded survey return was recorded as recently as 2008. But, importantly, an estimate of a yearly population size – recognizing that no actual census numbers of the blackbird exist for any year – is appropriately presented with error bars, that is, with "estimation error," which for this species, using the most recent protocols, is at least 25 percent and may be as great at 50 percent. With that level of variance in population size estimates, available data do not allow resource managers (in the Department or elsewhere) to reject the hypothesis that *the tricolored blackbird has experienced relatively stable population numbers in California over the past several decades.*

All else being equal, smaller populations are less likely to persist than larger populations. To that platitude the petition makes much of a purported decline in the sizes of larger colonies of tricolored blackbirds in recent decades.[1] The petition neglects to make clear that colonies and populations are two very different demographic entities, the sizes of which have distinct implications for the survival and recovery of the tricolored blackbird. It is reasonable to infer (absent empirical evidence) that the bird may have existed on the pre-settlement California landscape as relatively few colonies that were huge in number in the Central Valley. The extensive tule-dominated wetlands of the south and east Sacramento-San Joaquin Delta and the great inland Tulare Lake may well have supported several million tricolored blackbirds. Measured in sheer numbers of individuals, those presumptive colonies were immensely more "successful" than others that may have inhabited less-extensive wetlands in coastal and inland California. But the contemporary distribution of the blackbird across nearly 40 California counties, with a small number of colonies numbering more than 10,000 birds and many colonies with fewer than 1000, allows no strong inference regarding the relative success of big versus small colonies, or the relative contributions of colonies of varying sizes, to the persistence of the species. The availability of unoccupied areas that support habitat conditions for tricolored

[1] Petitioners acknowledge that Graves et al. (2013) found no decline in colony size from the 1970s to 2009, but they dispute this finding in reliance on the summary report generated by Meese (2014), which was not subjected to any form of peer review.

blackbirds – of more than 800 areas thought to be suitable for tricolored blackbirds that were visited in the 2014 triennial survey, less than 20% were occupied – indicates that *habitat availability is not a factor that limits the size of the blackbird population.* The proliferation of smaller colonies in less extensive areas of habitat could well serve as a risk spreading "strategy" that is diametrically different from that employed by the species a century and a half ago; but it is proving to be successful on the managed landscape of contemporary California.

The ephemeral nature of colonies that exhibit "itinerant" behavior, with colonies frequently moving between areas that combine to offer suitable nesting substrates and proximate foraging opportunities, and the bird's capacity to shift among habitat types, make the tricolored blackbird one of the most adaptable native species on California's varied and changing landscape (Hamilton 1998, Orians 1961, Neff 1937). Colonies both large and small assemble, disperse, reassemble or splinter into smaller units, occupy historically occupied sites at new numbers, find new sites to occupy, stay at any site for varying lengths of time, may or may not nest, may or may not rear young with varying success, may or may not move en masse or in subgroups to subsequent sites where they may or may not rear a second brood. All of this goes on at "natural" wetland sites and managed or cultivated upland sites against a background of diverse nest-substrate types, varying levels of prey and forage availability, and sometimes devastating predator impacts on eggs and young.

The peripatetic behavior of the tricolored blackbird, its ability to nest in large groups and small ones, and its capacity to reproduce successfully in a wide breadth of physical conditions has allowed the bird to survive the loss of on the order of approximately 90 percent of its ancestral wetland habitats (most of which occurred more than a century ago), adapt to agricultural circumstances that replaced many of its pre-settlement haunts, and continue to exploit a California landscape hosting declining numbers of native species and ever-increasing novel ecological associations. Although the tricolored blackbird remains a predictable resident on the state's remnant wetlands, particularly those conserved in National Wildlife Refuges, it appears that a material proportion of the birds depend on, successfully reproduce in, and persist on agricultural situations on private lands (Graves et al. 2013).

Degree and Immediacy of Threat

As we describe here and in the letter submitted to the U.S. Department of the Interior and U.S. Fish and Wildlife Service, historical reports and published data indicate that tricolored blackbird numbers have ranged from about 100,000 to 400,000 individuals statewide over recent decades. That range estimate is freighted with substantial uncertainty, as an investigation of the large yet inappropriately exact population estimates reveal. In the process of amalgamating the data into brief summary reports conveying survey results for 2008, 2011, and 2014, the petition authors failed to convey critical information, including the ranges associated with minimum and maximum estimates, which could have readily been presented in summary form in tables or figures.

One example from the 2011 survey illustrates the problem associated with failing to do so. The site survey identified with number 5681 from the database maintained on the tricolored blackbird portal (available at http://tricolor.ice.ucdavis.edu/content/ urncatalogicetrbladd-383) reported a

best estimate of 8,000 individuals with a minimum of 5,000 and a maximum of 12,000. The report also includes the following narrative: "Difficult to estimate number of birds at the dairy because colonies are asynchronous…. *The actual number of birds could easily be three times higher than what I've reported*." [Emphasis added.] The wide range in estimates between survey years appears to largely be a result of a substantial variance in estimates for a small number of the visited sites. But the petition is unreasonable for other reasons as well.

The lone numerical representation in support of the "degree and immediacy of threat and request for emergency action" in the petition states that the "recent population decline has been most severe in the San Joaquin Valley and along the Central Coast. The number of birds in the San Joaquin Valley plummeted 78% in six years" (CBD 2014:49-50). That assessment is drawn from Meese (2014), which made clear that while some areas of California experienced apparent declines in blackbird numbers, others actually saw increases. Concomitant with reduced numbers in the San Joaquin Valley, summed survey records showed increases in birds of 145% in the Sacramento valley and Sierra Nevada "foothills." And while the numbers of birds in the San Joaquin Valley may have decreased in 2014 from previous survey years, numbers in the Sacramento Valley and adjacent foothills (which are surveyed less intensively) have increased. Movement of birds among drought-stressed regions within the state seems to best explain the diminished numbers in the southern Central Valley. The likelihood that drought could affect prey abundance, thereby influencing both abundance and distribution has been noted both by researchers (Erickson et al. 2007) and advocacy groups (Newbern 2014). *It is inappropriate to use the presence or absence of tricolored blackbird colonies or estimates of numbers from specific geographic areas to draw inferences regarding the statewide status of the species and its demographic trends.*

The confounding of large-scale and distant movements by colonies of tricolored blackbirds with colony loss or "extinction" contradicts the petition's case for listing the species. The petition asserts the premise that the "population in southern California remains highly endangered as well," while noting that Meese (2014) reports that the portion of the California tricolored blackbird population in the south state has increased by 126 percent over its numbers in 2008. In an apparent effort to support the contention that tricolored blackbirds in southern California are greatly imperiled, the petition quotes a letter from an advocate for the listing, which suggests that "the most plausible explanation for the apparent increase this year and the changes observed in Los Angeles County throughout the life of the surveys is the occasional and temporary influx of birds from the Central Valley." That might account apparently for some portion of those birds that ostensibly vanished from the San Joaquin Valley in or before 2014. In fact, the data do not allow one to draw the conclusion that the number of birds from the southern Central Valley has plummeted; rather, *the data suggest that all or some proportion of the birds have dispersed from the region, but not from the state.*

Impact of Existing Management

The petition describes with unsubstantiated detail, cases in which ill-timed harvest of silage grasses have caused the abandonment of agricultural sites by blackbird colonies or losses of some portion of the reproductive output of colonies. But, not underscored in the petition is the fact that successful exploitation of agricultural fields and pasturelands by tricolored blackbirds

has contributed to and is contributing to the survival and persistence of the species in California. Not reported in the petition are the records of birds successfully fledged from breeding colonies in agricultural fields. Those blackbirds from agricultural fields almost certainly exist in every colony count and every survey report over the past 50 years. Absent regulatory prohibitions against take, productive agricultural habitats have produced a substantial portion of the tricolored blackbirds fledged in every survey year, and continue to contribute to the species' large population numbers in California.

Recognizing the value of agricultural lands in supporting many, including the largest, colonies of tricolored blackbirds in recent years, a vigorous initiative to conserve the species on public and private lands is well established. A precedent-setting voluntary conservation initiative operates under the guidance and facilitation of the multiagency and stakeholder Tricolored Blackbird Working Group. That regional conservation partnership program of government agencies, dairy industry representatives, and conservation organizations addresses habitat enhancement and restoration opportunities, advises silage management on dairy pasture lands, engages in outreach and awareness campaigns, and strives to identify long-term solutions to harvest management practices that might replace public funding employed to partially compensate farmers that eschew or delay silage harvest to facilitate nest success. The group is advancing land and resource management practices, which include wetlands enhancement with water management best practices and habitat enhancement techniques, including planting and protection of nest-substrate plants, field flooding, and fencing. The group's representatives continuously engage in outreach, establish pre-breeding season agreements, and enroll farm operations in the conservation program. The group guides responsible stewardship of resident colonies by facilitating efforts to implement strategies to reduce disturbance of colonies, identify buffers around nesting areas, monitor bird behavior, and set harvest times.

In addition to the efforts of the working group, a subset of signatories to this letter have formally partnered with conservation organizations and applied for grant funding from the Natural Resources Conservation Service (NRCS) to secure funding for silage harvest management to protect tricolors. The groups applied to NRCS's Regional Conservation Partnership Program (RCPP), which provides funding through the Environmental Quality Incentives Program (EQIP) and other existing NRCS programs to fund silage buyouts and habitat restoration and enhancement for tricolors. Specifically the project will:

1. Implement the existing EQIP harvest management practice already successfully launched in California and critical over the last three years to the survival and successful reproduction of large tricolor colonies on dairy farms and forage operations in the Central Valley of California.
2. Establish an innovative working group with industry partners to develop, vet and pilot potential long-term solutions that could substitute for harvest management practices when farmers have tricolor colonies on their fields and avoid situations leading to the destruction of colonies on forage fields.
3. Implement an industry-led, promotional campaign highlighting farmers' role in saving this species, changing perception among farmers, particularly dairy farmers, regarding this issue, and educating the public on the importance of tricolors, dairy and forage farms and the role of NRCS.

4. Complement the harvest management practice with habitat restoration and enhancement projects, increasing tricolor management practices on current or future Wetlands Reserve Program (WRP) properties and on private agricultural lands to provide additional safe places for colonies of tricolors to successfully nest.

The $1.1 million grant application was awarded earlier this year and with the matching contributions from the grant applicants, there will be nearly $2 million dedicated to tricolor conservation efforts over the next five years.

It is difficult to envision continued landowner participation in conservation efforts should a state or federal listing occur and legal prohibitions to ongoing land practices be invoked. Listing the tricolored blackbird threatens to undermine Working Group efforts to the detriment of the species. "Because tricolors completely overlap private property in the Central Valley, listing them as endangered would be disruptive and counterproductive" (Hamilton 2000:5). With the species dependent to such a substantial degree on nesting habitat generated by the selective cultivation of triticale grain hybrids, dairy farmers voluntarily establish and sustain tricolored blackbird habitat on their lands. Through changes in planting and harvesting decisions, the farmers can avoid attracting tricolored blackbirds to their lands and avoid liabilities associated with take. *Although listing the species may prohibit isolated incidents of nest destruction, it is likely to do more harm than good by leading to a long-term decline in the availability of nesting habitat on private lands.*

Suggestions for Future Management

Monitoring

The petition points to "surveys conducted in 1994, 1997, and 2000 [which] were similar enough in scope and effort to enable the detection of a significant downward trend in the population during this period (Cook and Toft 2005)" (CBD 2014:8). And the petition states that "[b]eginning in 2008, the triennial statewide survey was revamped to include a strict new hierarchical coordination structure to standardize methodology and ensure more equal survey effort and thus more comparable results" (CBD 2014:7-8). Neither of those observations is true. As we document in the letter submitted to the U.S. Department of the Interior and U.S. Fish and Wildlife Service, numerous survey efforts since 1969 have been initiated. But none of the efforts to census the tricolored blackbird population in California has succeeded; the reported trends are likely an artifact of sampling design that cannot overcome the elusiveness and challenging ecology of the species.

It is unlikely that there is any terrestrial vertebrate species in California with a life history and behavior that challenges census efforts more than the tricolored blackbird. The bird is characterized by mass flights to foraging grounds, colonial breeding, nesting in dense thickets of grasses and brambles, and en mass abandonment of primary nesting sites and dispersal to secondary sites. Given the shortcomings of the sampling procedures, missed portions of the occupied landscape, inconsistently applied colony-size estimation techniques, and summing of site-specific guesstimates of larger colonies with more accurate counts of birds in smaller colonies to obtain a statewide population size estimate, the available annual estimates cannot

falsify, and seem to support the hypothesis that the tricolored blackbird is experiencing relatively stable population numbers using diverse resources across widely distributed habitat patches in coastal wetlands, central valley agricultural lands and remnant wetlands, and southern California.

The pervasive lack of rigor in the survey sampling techniques and lack of reliability in population size reports from decades of evolving efforts to provide a census of the tricolored blackbird is recognized by the one formal ongoing effort to link current knowledge of the bird to conservation actions, the Tricolored Blackbird Working Group. The Working Group, as described above, involves representatives from regulatory agencies, regulated interests, and other stakeholders who share concern for the tricolored blackbird and a desire to work cooperatively to help to enhance their numbers and sustain the birds and their habitats. One of the group's primary current initiatives recognizes the inadequacy of past efforts to estimate population size and document trends, and is hosting an effort to develop a more robust survey method that might provide statistically sound evidence of proportional population changes between surveys given clearly articulated starting assumptions. The approach – missing in past counting efforts and synthetic population-size estimates – attempts to generate unbiased estimates of the size of the California tricolored blackbird population using bioregion-based stratified sampling and establishing error estimates. In the focused forum of the working group, where the conservation biology of the species and on-the-ground approaches to habitat management and restoration techniques are vetted, work to better understand tricolored blackbird population size and trajectory is the current focus. *This initiative has the potential to generate well-informed estimates of the relative abundance of tricolored blackbirds in the future, and perhaps draw biologists closer to estimating accurately the bird's statewide population size.*

Management Actions

Habitat destruction, degradation, and fragmentation combine to produce the greatest threat to all native species residing in California. But when the petition states that the "greatest threats to this species are the direct loss and degradation of habitat from human activities" and "most native habitats that once supported nesting and foraging Tricolored Blackbirds in the Central Valley have been replaced by urbanization and agricultural croplands unsuited to their needs" (CBD 2014:37), the petition gets the issue of habitat loss strictly correct, while missing the key to why the blackbird survives today. The abundance of the tricolored blackbird certainly declined with the dramatic losses of its expansive pre-settlement habitats, mostly more than a century ago. For some species such habitat losses are accompanied by a sustained decline in numbers that leads to risk of extirpation or extinction. Not so with the tricolored blackbird.

In an adaptive response not unprecedented among the native wildlife in California, but nonetheless an uncommon occurrence, the tricolored blackbird, when denied the wetland circumstances where it historically thrived, shifted habitats. Nesting that once occurred nearly exclusively in flooded circumstances in vast tule stands moved to upland circumstances onto the aggressive invasive Himalayan blackberry and into agricultural situations where silage grasses for livestock offered nesting opportunities. In certain managed circumstances nesting habitats are adjacent to particularly productive foraging habitats, rich sources of invertebrate prey and grains used by juvenile and adult birds. Although larger remnant wetlands still occur across the

Central Valley, the upland situations dominated by non-native plants and cultivated grasses now typically support the larger extant colonies of tricolored blackbirds. The habitat of tricolored blackbirds is different than a century ago. *Habitat loss, the primary threat to most imperiled species, does not threaten the continued existence of the blackbird*. Recognizing that fact, efforts to enhance the suitability and productivity of the "new" upland habitat areas used by tricolored blackbirds – inducements to habitat management on the agricultural landscape – should be the primary focus of conservation planning for the tricolored blackbird.

Availability and Sources of Information

As we documented in our letter submitted to the U.S. Department of the Interior and U.S. Fish and Wildlife Service, there is good reason to be skeptical about claims made in the petition submitted to the Commission. In light of this fact and the Department's independent obligation to evaluate both the petition and other available information, we implore the Department to go to the source of the data regarding the numbers of tricolored blackbirds in California over the past several decades. With respect to historical data, a combination of published and gray literature provides a fair bit of detail that can be used to inform summed totals. In some cases, sources of potential error are disclosed and in some cases error margins are disclosed. With respect to more recent data, primary material such as data sheets may be available. The underlying data sheets and ranges of estimates are invaluable because they drive home the high margin of error associated with summed populations presented as precise census counts. The information in the petition here is largely derived from assertions and select data drawn from summary reports and other gray literature, not subjected to peer-review or published in scientific journals. As a consequence, the Department is obliged to be critical in its assessment of the petition. *Center for Biological Diversity v. Fish and Game Commission* (2008) 166 Cal.App.4th 597, 611.

Conclusion

In light of the foregoing and the information available to the Department, we urge you to recommend against designating tricolored blackbird as a candidate.

Sincerely,

J.P. Cativiela
Program Coordinator, Dairy Cares

Cc: Eric Loft, Chief, Wildlife Branch
Lacey Bauer, Senior Staff Counsel

Encl.

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March 2, 2015

Sally Jewell, Secretary
U.S. Department of the Interior
1849 C Street, NW
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Dan Ashe, Director
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Re: Petition to List the Tricolored Blackbird as Endangered on an Emergency Basis

Dear Secretary Jewell and Director Ashe:

This letter is prepared and submitted by Dairy Cares, a coalition of California's dairy producer and processor organizations, including the state's largest producer trade associations (*Western United Dairymen, California Dairy Campaign, Milk Producers Council, California Farm Bureau Federation, and California Cattlemen's Association*) and the largest milk processing companies and cooperatives (*including California Dairies, Inc., Dairy Farmers of America-Western Area Council, Hilmar Cheese Company, and Land O'Lakes, Inc.*). Formed in 2001, Dairy Cares is dedicated to promoting the long-term sustainability of California dairies. The coalition represents California's more than 1,500 dairy farms.

Joining us in support of this letter are the California Chamber of Commerce, California Building Industry Association, California Waterfowl Association, California Grain and Feed Association, California Association of Wheat Growers, and the Rural County Representatives of California. Together, we are writing to express our vehement opposition to the petition submitted by the Center for Biological Diversity to list the tricolored blackbird as an endangered species on an emergency basis. The petition does not meet any of the relevant standards:

- The standard for emergency action, 50 C.F.R. § 424.20, authorizing listing in the event of "any emergency posing a significant risk to the well-being of fish, wildlife, or plant."

- The standard for a 90-day finding, 16 U.S.C. § 1533(b)(3)(A), "whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted."

- The standard for listing as endangered, 16 U.S.C. § 1532(6), whether the species "is in danger of extinction throughout all or a significant portion of its range."

With respect to the decision whether to list, the Secretary must make the determination "solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction." 16 U.S.C. § 1533(b)(1)(A). Furthermore, there is no right to petition for an emergency listing, see *Fund for Animals, Inc. v. Hogan*, 428 F.3d 1059, 1064 (D.C. Cir. 2006), and emergency listing is an extraordinary action to be taken "only when there is an emergency posing a significant risk to the well-being of [the] species," 16 U.S.C. § 1533(b)(7).

I. SUMMARY

Petitioner has not met the standard for emergency listing or the standard for a 90-day "may be warranted" finding. Therefore, the petition should be denied in toto. The following facts support denial of the petition:

- Accurate estimates of the size of the tricolored blackbird population are unavailable for any period in recorded history. That said, available data indicate that the species' abundance has been stable for the past 50 years.

- The range and distribution of the tricolored blackbird appears to have remained stable since Neff conducted range-wide surveys in the 1930s. The species appears to have adapted from pre-settlement conditions to a landscape dominated by non-native species and largely cultivated.

- Conclusions regarding colony size are tentative at best due to the potential for large colonies to skew such conclusions and the high margins of error associated with estimates of large colony size. Assuming colony size has decreased over time, there is no evidence that this places the species at greater risk of extinction. In fact, the contrary is more likely if there are a larger number of smaller, more dispersed colonies.

- There are regulatory mechanisms in place to prevent direct harm to the species in the form of coverage under the Migratory Bird Treaty Act (MBTA) and California Endangered Species Act (CESA). A federal listing offers limited additional benefits. In fact, federal listing threatens both current conservation efforts and the welfare of the species because it may encourage dairy farmers, who cultivate valuable nesting habitat for the species annually, to halt the practice.

- The petition is plagued by inaccuracies, which compel the Fish and Wildlife Service to be skeptical when assessing its merit.

II. DISCUSSION

A. Prior Regulatory Activity

On April 8, 2004, the Center for Biological Diversity filed a petition to list the tricolored blackbird as a threatened or endangered species and requested emergency listing of the species. 71 Fed. Reg. 70,483, 70,484 (Dec. 5, 2006). On May 25, 2004, the Fish and Wildlife Service determined that emergency listing was not warranted. *Id*. On December 6, 2006, the Fish and Wildlife Service issued a 90-day finding that "the petition does not present substantial scientific or commercial information indicating that listing the tricolored blackbird may be warranted." *Id*. at 70,483.

B. Status and Trend

Although data on tricolored blackbirds have been gathered for decades, survey methods for the species have varied widely and survey design has been virtually non-existent. As a consequence, while the distribution of the species is well understood, accurate estimates of the sizes of tricolored blackbird populations are not available. Below we describe the limits associated with available data regarding the status and trend of the species. We also describe the reliable guidance for conservation planning that can be drawn from those data. Available data are consistent with three hypotheses – that the range of the species has been stable over most of the past century, that the abundance of the species has been roughly stable over the past 50 years, and that the abundance of the species was likely substantially higher going back 80 years and further to the earliest recorded observations in the nineteenth century.

No one has attempted to attach confidence intervals to the rough estimates of abundance from the more formal surveys of the tricolored blackbird carried out since the 1930s, which might allow inferences regarding its status and trends; however, there is little doubt that the margins of error associated with such intervals would be large. As a consequence, "census" data available for the species are insufficient for purposes of testing more precise hypotheses about the abundance of the species. This reflects the inability of surveyors to sample the entire range of the species and the failure to adopt a probabilistic sampling procedure that would allow conservation planners to draw inductive inference about areas not sampled from areas that are sampled (McDonald 2004). In this context, reported survey results – even those that were gathered over the past 20 years – are insufficient to allow one to draw inferences about population trends. Alarmist rhetoric about a precipitous decline and imminent extinction, which dates back to the 1930s (Neff 1937:62) and has been advanced repeatedly over the subsequent eight decades (for example, see Cook and Toft 2005), is not supported by the data that have accrued from the many counting efforts that have been carried out over that extended period.

1. Limits Associated with Available Data

As is the case with many species of birds, there is anecdotal information regarding the tri-colored blackbird dating back to the mid-19th century. The petition makes reference the observation of A.L. Heermann in 1859 that large flocks of tricolored blackbirds would "darken the sky for some distance by their masses" (CBD 2015). Surely what is known of the bird's habitat requirements indicates that the extensive historic Sacramento-San Joaquin Delta and the West's largest freshwater lake, Tulare Lake, most likely supported massive colonies. While indicating that efforts to estimate the abundance of tricolored blackbirds did not commence until the 1930s (CBD 2015:3), the petition includes the bold but wholly unsupported statement that "a history of market hunting and massive loss of native marshland habitat drastically reduced the population by the mid-twentieth century," (CBD 2015:16).[1] It must be acknowledged that there are no reliable data at all regarding the size and distribution of the tricolored blackbird population before the 1930s. Claims that the birds numbered in the millions are based on surmise, not science.

An effort to assess the status of the species was undertaken in the 1930s by Johnson Neff, an employee of the Bureau of Biological Survey within the U.S. Department of Agriculture (for example, see Neff 1937). Neff properly noted that "[e]stimates of the population are notoriously inaccurate, and are subject to wide variation" (Neff 1937:65). For this reason, he provided estimates in round figures, "for the best that can be expected is a general idea of relative numbers" (Neff 1937:66). The data presented by Neff has been subject to interpretation, including in the petition. The petition cites Hamilton et al. (1995) for the proposition "Neff observed about 1,105,100 individual Tricolors" (CBD 2015:18). Perhaps inadvertently, the petitioner did not describe the time period over which Neff observed the species. The 90-day finding states that "Neff estimated between 95,000 and 737,000 breeding birds for the 5-year timeframe." 71 Fed. Reg. at 70,487. DeHaven et al. (1975a:178) concluded that Neff identified an average of more than 375,000 breeding birds, and Beedy et al. (1991:13) concluded that Neff identified an average of about 480,000 breeding birds. These statements are more precise than is appropriate, as Neff himself suggested and as subsequent investigations have borne out, given that the summing of rough estimates can propagate astonishingly high observer error.

Thirty years passed after Neff's efforts before another attempt was made to assess the status of the species. DeHaven et al. (1975a) conducted surveys over the four-year period from 1969 through 1972, attempting to sample the entire range of the species in 1971. In 1969 and 1970, they concentrated on the Central Valley and in 1972 they focused on an area from the northern San Joaquin Valley to southern Oregon (DeHaven et al. 1975a:166). The results are summarized in the 90-day finding and set out in Figure 1. "During 1969-1972, we found about 532,000 breeding birds, or about 133,000 a year" (DeHaven et al. 1975a:178).

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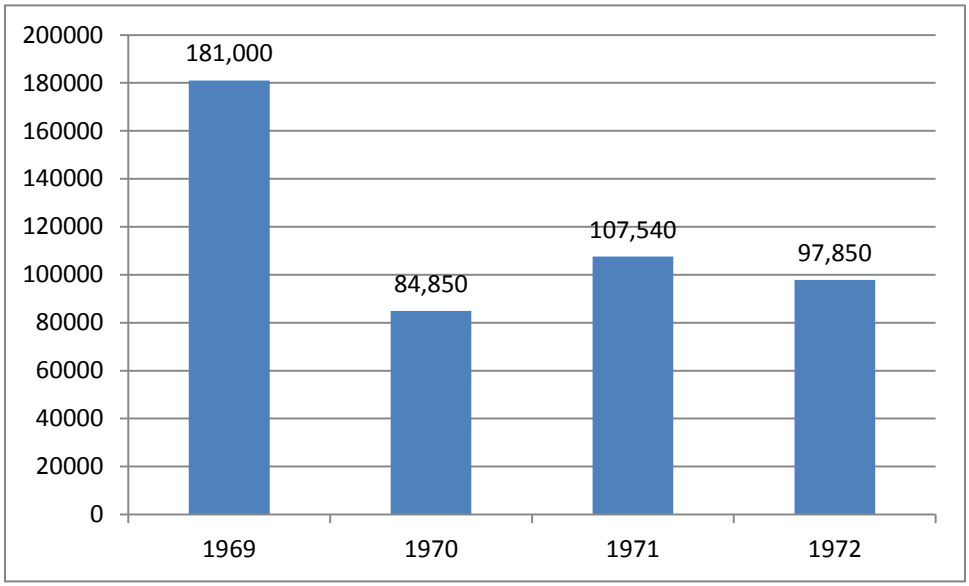
[1] Neff draws the opposite conclusion in his 1937 note, indicating that "[t]here is no indication that the Tri-colored Red-wing is losing ground," and that the evidence "indicates that the Tri-colored Red-wing as a species is thriving" (Neff 1937:80). Twenty-five years later, Orians drew the same conclusion as Neff regarding the status of the species (Orians 1961:309).

Figure 1 – Population Estimates, 1969-72



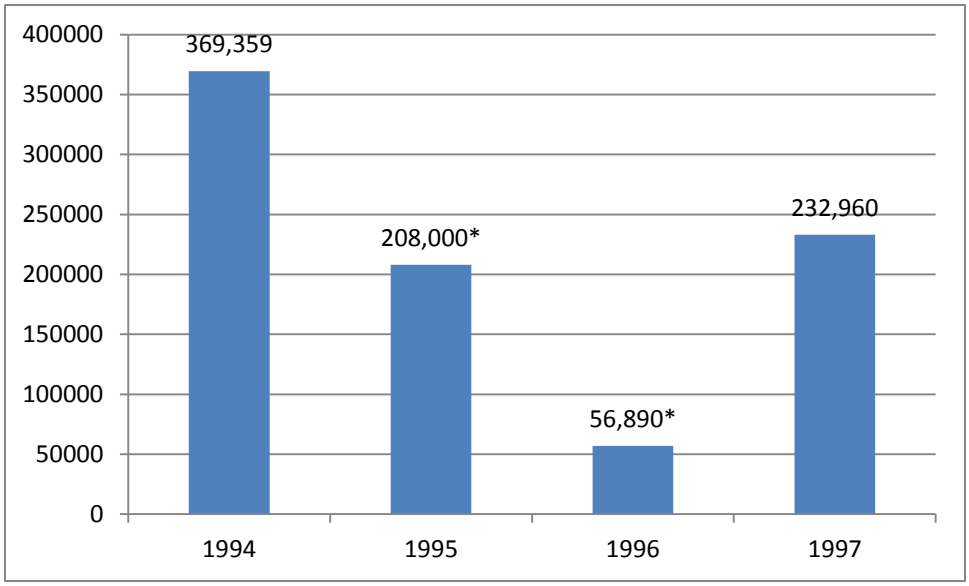
Beedy et al. (1991) described estimates of tricolored blackbirds for the 1980s, reporting an average of 51,600 birds annually. Beedy and Hamilton (1997:12) state that Beedy et al. (1991) reported a range for the same period of 35,000 to 110,000 birds (although we were not able to locate this range within the 1991 report). Those data may be the sum of observations described in the appendices to the 1991 report. Beedy and Hamilton (1997:12) caution that the population estimates for the 1980s were incomplete "because they included only sporadic surveys in the southern San Joaquin Valley…"

Beedy and Hamilton (1997) report on annual surveys conducted from 1994 to 1997 (see Figure 2). The authors indicate the effectiveness of the 1994 survey was enhanced by rangewide observations of the blackbird in the preceding three years (Beedy and Hamilton 1997:13). They also describe the 1997 survey as an intensive sampling effort that occurred throughout California (Beedy and Hamilton 1997:13). They report the results of the 1994 and 1997 efforts by region and county, and caution that the 1995 and 1996 surveys did not include range-wide follow up and may have overlooked large breeding colonies (Beedy and Hamilton 1997:13). As a consequence, the authors report the survey results but discount their value. It is notable that the authors include margins of error of ±15 percent with the reported 1994 and 1997 estimates. Unfortunately, they do not describe how they arrived at the error margins.

Surveys were conducted in 1999 and 2000 and described in reports submitted to the Fish and Wildlife Service (Hamilton et al. 1999; Hamilton 2000). Surveys were carried out over a three-day period in April 1999, while a fourth day was added to the April 2000 effort (Hamilton 2000:8). In both years, further observations were added to the results from other dates within the year. The number of colonies encountered totaled 53 in 1999 and 71 in 2000 (Hamilton 2000:10). Participation by DeHaven in the 2000 survey effort was identified as the specific source for fully 15,000 individual tricolored blackbird observations, in addition to the numbers

identified by other survey participants (Hamilton 2000:11). Hamilton reported a total of 95,000 birds in 1999 and 155,000 birds in 2000 (Hamilton 2000:25).

Figure 2 – Population Estimates, 1994-97

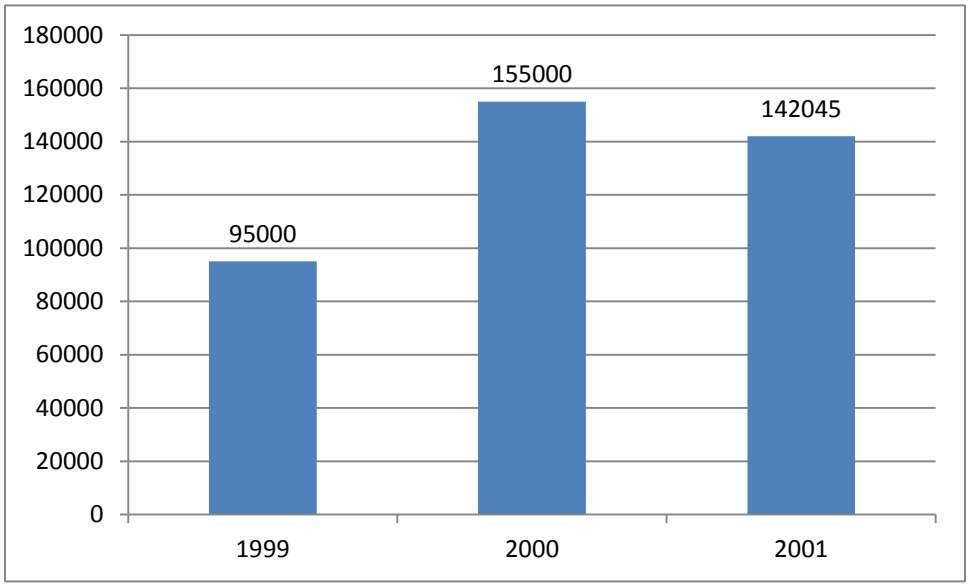


*Data characterized by Beedy and Hamilton (1997) as unreliable due to the limited survey effort during these years.

A state-wide survey was conducted in 2001 by the Point Reyes Bird Observatory with support from the Fish and Wildlife Service; the authors reported a total of 142,045 birds (Humple and Churchwell 2002:9). Whereas surveys from 1994 to 1997 took place on one day in April of each year, the 2001 survey recommended season-long sampling. That said, most surveyors submitted only a single survey report; apparently, season-long surveys were not conducted (Humple and Churchwell 2002:12).

Green and Edson (2004) coordinated a survey in 2004, which covered slightly more than 250 total sites. The survey was concentrated primarily in the Central Valley and from April 16-19, although it did include limited data collection beyond those spatial and temporal limits. Green and Edson (2004:27) report estimates by county and habitat type in table 2 of their work, providing low and high summary estimates. Notably, those summed low and high estimates range from a total of 135,385 to 312,485 birds. The wide range is disproportionately a result of a large variance in estimates for a small number of the visited sites. In particular, at one site multiple surveyors estimated between 11,000 and 102,000 individuals present, a range that reinforces the difficulty, described by Neff (1937) and others since, that is associated with estimating the real numbers of tricolored blackbirds in larger colonies.

Figure 3 - Population Estimates, 1999-2001



Multiple references are made to a 2005 survey (CBD 2015; Hamilton 2004; Kelsey 2008; Kyle and Kelsey 2011). Petitioners indicate that "[n]umbers are unknown for the 2005 survey." Kelsey (2008) and Kyle and Kelsey (2011) report a total of 257,802 birds in 2005. The tricolored blackbird portal maintained by University of California, Davis, includes a bibliography with an unpublished statewide survey by EDAW.

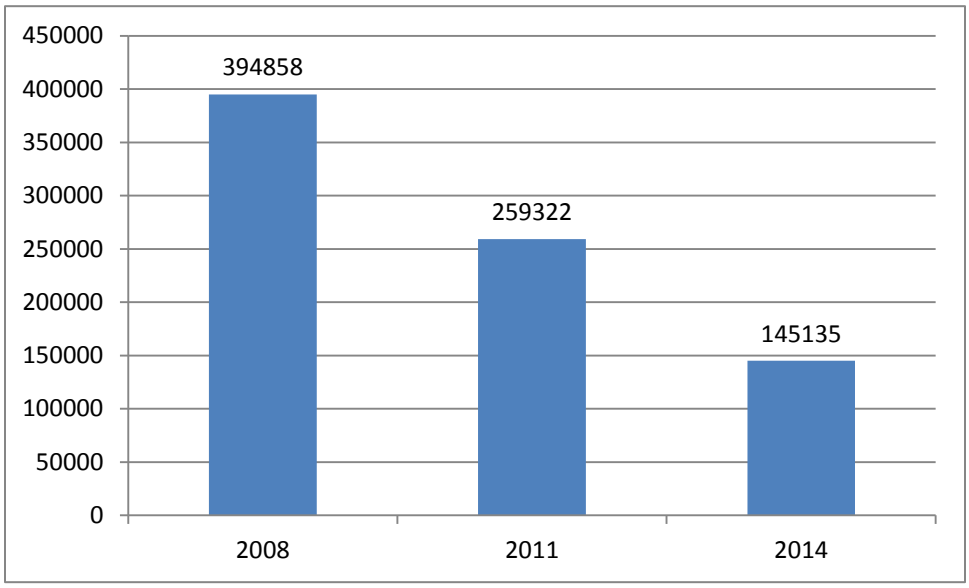
In 2008, an effort was made to improve upon past surveys. This included commencement of triennial surveys (which have since occurred in 2008, 2011, and 2014), the introduction of the online tricolored blackbird portal (to allow entries to be recorded over the internet), and the identification of county coordinators, intended to increase the quantity and quality of the survey effort. While the petition indicates that the same survey protocol was used for all three surveys (CBD 2015:21), there are a number of differences between the first two protocols and the 2014 protocol.

A survey form allowed participants to record their best estimate with minimum and maximum estimates. The 2008 and 2011 protocols state that "you are providing us with an approximation of colony size and not an exact count." No specific guidance was provided to participants regarding the development of minimum, maximum, and best estimates. Apparently, individual survey returns were combined by summing the "best estimates," subject to adjustment by Meese in circumstances where he visited the survey site (Meese 2014; Kyle and Kelsey 2011; Kelsey 2008). Those summed data are set out in Figure 4, below.

In the process of amalgamating the data into brief summary reports conveying survey results for 2008, 2011, and 2014, the petition authors have failed to convey critical information, including the ranges associated with minimum and maximum estimates, which could have readily been presented in summary form in tables or figures. One example from the 2011 survey illustrates the problem associated with failing to do so. The survey identified with number 5681 from the

database maintained on the tricolored blackbird portal (available at http://tricolor.ice.ucdavis.edu/content/ urncatalogicetrbladd-383) reported a best estimate of 8,000 with a minimum of 5,000 and a maximum of 12,000. The report also includes the following narrative: "Difficult to estimate number of birds at the dairy because colonies are asynchronous…. The actual number of birds could easily be three times higher than what I've reported."

Figure 4 – Population Estimates, 2008, 2011, and 2014



2. Lessons that Can Be Drawn from Available Data

The petition provides a skewed and garbled summary and assessment of available data pertinent to the status and trend of the tricolored blackbird. For example, although the petition includes discussion of DeHaven et al. (1975a), it fails to offer the annual and average population estimates provided by DeHaven and his colleagues (CBD 2015:18). Likewise, the petition acknowledges that Beedy and his colleagues estimated the tricolored blackbird population size was, on average, approximately 52,000 breeding adults annually during the 1980s, but it discounts the estimates from the 1980s claiming that they "were not based well enough on field surveys and so cannot be considered adequate for evaluating the population for the period addressed" (CBD 2015:18).

As discussed above, there are real limits to making any reliable inferences using the available tricolored blackbird data as a basis for informing public policy; shortcomings in the design and implementation of surveys taint even the most contemporary data. But, rather than dismiss the population estimates made by the various surveys outright, it is more appropriate to consider all available counts and estimates in the spatial and temporal context in which they were reported to evaluate the species' status and trend. Table 1 provides a summary of the relevant information (all numbers are rounded to 1000s).

Table 1 – Summary of Data regarding Populations

Source	Time period covered	Information regarding population
Neff	1931-1936	Estimated 1.5 million nests over 6 year period (Neff 1937:79) Interpreted to estimate annual abundance ranging from 95,000 to 737,000 birds (71 Fed. Reg. at 70,487) Interpreted to include observations of 1,105,000 birds over the 6 year period (CBD 2015:18)
DeHaven et al.	1969-1972	84,850 to 181,000 birds annually (average 133,000) (DeHaven et al. 1975a:177-78)
Beedy et al.	1980s	35,000 to 110,000 birds annually (average 51,600) (Beedy et al. 1991:13; Beedy and Hamilton 1997:12)
Beedy and Hamilton	1994-1997	57,000-370,000 (Beedy and Hamilton 1997:13)
Hamilton	1999-2000	95,000 and 155,000 birds, respectively, during years surveyed (Hamilton 2000)
Humple and Churchwell	2001	142,045 birds (Humple and Churchwell 2002)
Green and Edson	2004	Estimate of 135,385 to 312,485 birds during a survey concentrated in the Central Valley (Green and Edson 2004)
Kyle and Kelsey	2005	257,802 birds (Kyle and Kelsey 2011:Table 3; Kelsey 2008:Table 3)
Meese and others	2008, 2011, 2014	145,000 to 395,000 birds annually during years surveyed (Meese 2014)

The data presented by Neff can be reconciled with the notion that the tricolored blackbird population was substantially larger in the 1930s than it is today; and one could reason that Neff may have underreported the size of the population due to his constrained survey effort in relation to the species' expansive range. But, it is also possible that Neff, who surveyed over a nearly three-month period in some years, counted some number of birds (perhaps a substantial number)

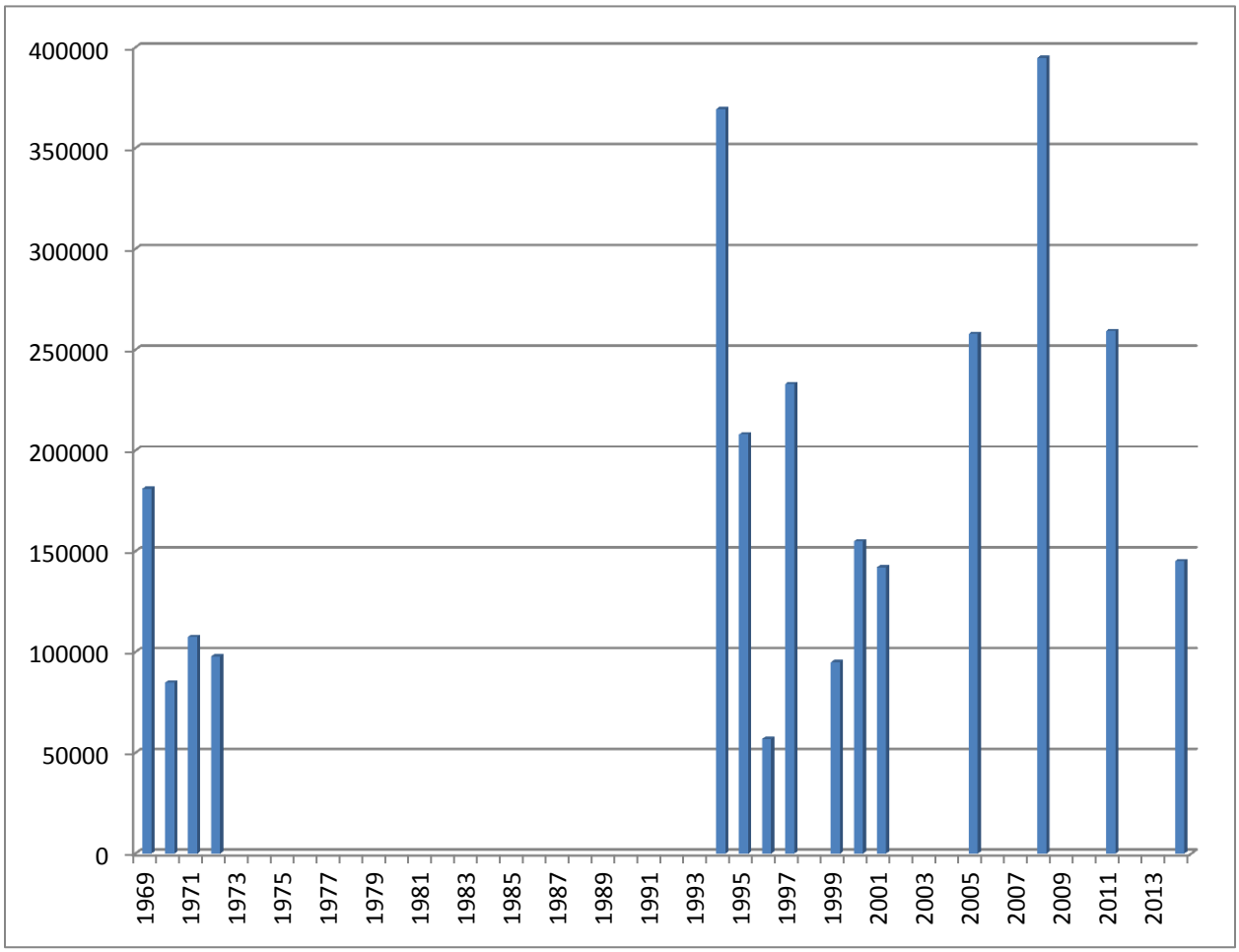
on multiple occasions. In addition, it was necessary to make estimates of very large numbers of nests. As Neff himself readily acknowledged, his estimates were bound to be inaccurate and subject to wide variations (Neff 1937:65).

The more recent data indicate that, over the past 45 years, the population of the tricolored blackbird has fluctuated from approximately 50,000 individuals to more than 400,000. As Lande (2002:19) warns those who need to estimate the sizes of populations for purposes of viability analyses, "[a]ll populations fluctuate stochastically, with coefficients of variation in annual census sizes usually in the range of about 20 to 80%." This statement usefully applies to tricolored blackbirds, with the survey data providing strong evidence of high inter-annual variability in survey numbers (Graves et al. 2013). As Graves and her co-authors suggest, it is inappropriate to draw conclusions from short-term trend data, especially data that are accompanied by high estimation error. The most recent survey numbers must be viewed in that light.

That said, the data in Table 1 from the first half of that period suggest lower population numbers than those from the second half of the period. In fact, in every year but one between 1969 and 1989, tricolored blackbird numbers reported were lower than those reported in 2014. Moreover, data from the second half of that multi-decade period do not indicate that the size of the blackbird population plummeted as the petition asserts (CBD 2015:20); instead, the data are consistent with that of a population that has fluctuated, but persists above the low of about 100,000 individuals that was recorded at the turn of the millennium (see Figure 5).

The petition contends that every report on the tricolored blackbird since the 1970s has sounded an alarm bell regarding a precipitous decline and worrisome conservation status of the species (CBD 2015:22). Some commentators predicted imminent extinction several years before the highest population estimate in decades in 2008 (see Cook and Toft 2005), and even when reporting those record survey numbers, Kelsey states (inexplicably) that "[t]here have been striking declines in the abundance of Tricolored Blackbirds over the last 70 years" (Kelsey 2008:7). But others have been more circumspect (for example Graves et al. 2013). Available data do not bear out the petitioners' narrative of diminishing numbers over decades followed by a monotonic slide toward oblivion. Rather, taken at face value, the data suggest that the species has been bouncing around at numbers fewer than 100,000 to 400,000 tricolored blackbirds for the past 50 years. It is likely that reported numbers are consistently lower than the actual population size due to geographically and temporally constrained survey conditions that miss blackbirds that may be dispersing among colony sites and/or occur outside of the survey envelopes (which have varied in site numbers and locations in every year in the survey record). Available scientific information on the tricolored blackbird's abundance contradicts the assertion in the petition that the species is in danger of extinction or likely to become in danger of extinction throughout all or a significant portion of its range.

Figure 5 – Population Estimates Reported in the Triennial Survey Reports



*Estimates provided in 1995, 1996, and 1999 were described as underestimates by the authors of the reports summarizing the data for those years. It is near certain that data for all years underestimate the population given limited survey effort, included sites visited.

C. Distribution

The tricolored blackbird occurs mostly within California, where it has been recorded in 46 counties from Imperial and San Diego in the south to Modoc and Siskiyou in the north. 71 Fed. Reg. at 70,485. The bird's range extends south into Baja California, north into Oregon and Washington, and east into Nevada. That range appears to have been stable from the time Neff conducted his studies of the blackbird to the present; the most recent survey covered portions of 41 counties, and the bird was sighted in 37 of those. That survey was limited to a three-day period (April 18-20, 2014), the locations surveyed within counties were limited (fewer than 10 locations were surveyed in 14 of the counties included in the survey), and at least two counties known to be inhabited in the past – Imperial and Siskiyou counties – were not included (Meese 2014). Furthermore, the survey protocol provided that the survey effort could be limited to 15

minutes of observation of a location (see http://tricolor.ice.ucdavis.edu/content/tricolored-blackbird-statewide-survey-protocol -- last visited Feb. 18, 2015).

Species facing imminent extinction, without exception, experience declines in population numbers *and* reduction in their geographic range and the distribution of populations within that range. Those circumstances are the inevitable outcome of habitat loss and the concomitant insularization of the remaining areas of the landscape that can be occupied by the imperiled species (Groom et al. 2005, Wilcox and Murphy 1985). Those circumstances do not apply with the tricolored blackbird. Rather, the range and distribution of the species is as described in the Service's previous 90-day finding: "The species is found throughout the majority of its historical range, with additional new breeding populations documented in Washington, Oregon, and Nevada. Therefore, we find that the petition and other information otherwise available to us does not contain substantial scientific or commercial information indicating that the continued existence of the species is threatened by the present or threatened destruction, modification, or curtailment of the species' habitat or range." 71 Fed. Reg. at 70,488.

Not only does the blackbird still occupy the majority of its apparent historical range, but geographic areas within that range, which never experienced colonies of large size, exhibit sustained occupancy by colonies of lesser size. The contemporary distribution of the blackbird includes numerous colonies that number fewer than a thousand individuals in wetland and upland circumstances that cannot support larger colonies. An instructive example of a persistent "small colony" is a demographic unit of tricolored blackbirds, which overwinters in California, but breeds in Nevada's Carson Valley; it has persisted as about 20 nesting pairs since at least 1996 on a two-acre marsh in a grazed pasture (Ammon and Woods 2008; Floyd et al. 2007). No data support the contention that colonies numbering fewer than thousands of individuals are at risk of extirpation where habitat – described as vegetation composition and structure, food resources, and defenses against predators – is available.

Despite documentation of site fidelity, reproductive success, and persistence of smaller colonies, the petition asserts that "Allee effects" (or "inverse density dependence" – CBD 2015:48) put the tricolored blackbird at the same risk of precipitous decline toward extinction that, it has been speculated, led to the demise of the passenger pigeon. No data support such an assertion. Indeed, unlike the passenger pigeon, which apparently was unable to survive the razing of eastern forests reducing its distribution and unable to tolerate massive losses due to hunting, the tricolored blackbird has shifted from the expansive low marshlands that characterized pre-settlement California and has adapted to upland circumstances dominated by non-native vegetation on a largely cultivated landscape (Orians 1961). The passenger pigeon went from vast colonies in continuous habitat to its disappearance in a few short decades; the tricolored blackbird has gone from very large colonies to smaller colonies that appear to accommodate their remaining natural habitats and take advantage of new landscape circumstances over the period of a century. The analogy of the ill-fated passenger pigeon could not be less ecologically and evolutionarily apt.

The petition contends that the tricolored blackbird "has been extirpated or nearly extirpated in portions of its former range" (CBD 2015:12). As far back as the intensive ecological studies by Gordon Orians and colleagues, it was recognized that highly dispersive colonies of widely

varying sizes occupied a diffuse mosaic of landscape circumstances shifting among habitats and resources within and between years. Subsequent researchers have characterized the species as nomadic and erratic (DeHaven et al. 1975b) and opined that perceived local or regional declines may resemble population collapses but likely are the result of the species' behavior (Hamilton 1998). To any extent that tricolored blackbirds have abandoned portions of their "former range," the species appears to have concomitantly expanded its range into adjacent or more distant areas, often taking advantage of fresh landscape circumstances, including novel physical and biotic resources. Orians (1961:309) anticipated the phenomenon to come: "Today in the Great Valley dams and levees have virtually eliminated extensive winter flooding, most of the vast marshes have been drained, and the alkali flats and prairies are now under cultivation, so that it might be expected that the Tricolored Blackbird, its system no longer adapted to present-day conditions, would be in danger of extinction … [h]owever, the attributes of the social system which adapted it to former conditions have actually pre-adapted it to agriculture."

D. Population Structuring

The petition makes much of the purported long-term decline in average colony size. Graves et al. (2013) report a 63 percent decline in average colony size from 1935 to 1975. At the same time, they report no decline from the 1970s to 2009; a finding the petition explicitly and implicitly disputes. Meese (2014:11) presents only limited information regarding colony size, asserting that the 10 largest colonies represent a decreasing proportion of the tricolored blackbird population over time. It is reasonable to hypothesize that over the last century average colony size has declined, primarily due to reduction and fragmentation of wetland habitats used by the species and due to the shifting mosaic of agricultural habitats. But empirical support for this hypothesis may only be derived from analysis of the above-described data set. Colony size estimates are least reliable at the upper end of the colony-size continuum. Estimates of the sizes of colonies with greater than a thousand birds both are perforce accompanied by very large error bars and suffer from estimation techniques that are inconsistently applied across time. For example, Green and Edson (2004) estimated a single colony to be made up of between 11,000 and 102,000 individual tricolored blackbirds. That extraordinarily wide colony-size "guesstimate" compromises the integrity of any synthetic population size estimate. Furthermore, the database maintained on the tricolored blackbird portal includes many colony size estimates that are confoundingly inexact. For example, the site survey identified as number 5241 (available at http://tricolor.ice.ucdavis.edu/content/urncatalogicetrbladd-125) from 2011, reported minimum and maximum estimates of 20,000 to 60,000 individuals. Because any analysis of a species' status and population trend can only be as good as the data upon which it is based, it must be acknowledged that any inference drawn from the information presented in the petition and extant literature regarding colony size is accompanied by high (perhaps, unacceptably high) levels of uncertainty.

Even assuming that there has been a long-term decline in the proportion of the tricolored blackbird population that exists in the 10 largest colonies, or that there has been a decline in the average size of all colonies, it is not clear that this places the species at greater risk of extinction than in previous decades. The petition claims, without any support, that "bigger colonies are more successful for breeding" (CBD 2015:27). But there are reasons to expect that a larger number of smaller, more dispersed colonies may be equally or more effective as a hedge against

extinction than a smaller number of large colonies. One reason is that dispersed blackbird populations may be less prone to extreme, stochastic environmental events – flooding, fire, or disease outbreaks -- that might result in mortality or reproductive failure (see Primack 2006). In light of the foregoing, the petition has failed to establish based on available scientific information that, due to changes in the structure of the tricolored blackbird population(s) over time the species is in danger of extinction or likely to become in danger of extinction throughout all or a significant portion of its range. Available information contradicts that assertion. The species has exhibited relative stability in numbers over a several-decades-long period. The numerical stability of the tricolored blackbird is attributable at least in part to the contemporary distribution of the species, spreading the risk of extinction across many colonies inhabiting a wide and varied landscape under natural and managed conditions.

E. Regulatory Mechanisms

The tricolored blackbird is protected under the Migratory Bird Treaty Act (MBTA). The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. 16 U.S.C. § 703.

The tricolored blackbird is listed as endangered under the California Endangered Species Act (CESA). It was added to the list in December, 2014, on an emergency basis by the California Fish and Game Commission. Fish and Game Code section 2080 prohibits take of any species that the Commission determines to be endangered or threatened. Fish and Game Code section 86 defines take to mean "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Cal. Fish & Game Code § 86.

F. Conservation Efforts

In 2004, a group composed of agricultural organizations, other landowner groups, wildlife and conservation agency representatives, tricolored-blackbird researchers, and conservation organizations convened the Tricolored Blackbird Working Group. The purposes of this Working Group have been to improve human understanding of the species, advance efforts to improve habitat for the species, and to address the conservation challenges posed by tricolored blackbirds that nest in silage fields on dairy farms. The Working Group developed and adopted a Conservation Plan for Tricolored Blackbird in 2007, which was updated in 2009. That document has guided activities of the Working Group and on the ground conservation efforts to improve habitat for the species. Those efforts are important to recognize as they illustrate the commitment of agency and stakeholder groups to pursuit of meaningful conservation of tricolored blackbirds through land use adjustments.

Regulated interests participate in voluntary conservation efforts in order to seek win-win solutions. Listing the tricolored blackbird threatens to undermine Working Group efforts to the detriment of the species. "Because tricolors completely overlap private property in the Central Valley, listing them as endangered would be disruptive and counterproductive" (Hamilton 2000:5). This is the case because the species is dependent to a substantial degree on artificially created nesting habitat to reproduce. Dairy farmers voluntarily establish such nesting habitat on

their lands. Through changes in planting and harvesting decisions, the farmers can avoid attracting tricolored blackbirds to their lands and also avoid liability for take. Although listing the species may prohibit isolated incidents of nest destruction, it is likely to do more harm than good by leading to a long-term decline in the availability of nesting habitat.

Nonetheless, the petition documents, with unsubstantiated detail, annual events in which agricultural habitats are disturbed, degraded, or destroyed by inopportune cutting of all or parts of silage fields. It is alleged that these events render such habitats unsuitable and account for very substantial losses of nests and offspring. But not explicitly reported in the petition are the records of birds successfully fledged from breeding colonies in agricultural fields. Those blackbirds from agricultural fields exist in every colony count and every survey report over the past 50 years. Absent regulatory prohibitions against take, productive agricultural habitats have produced a substantial portion of the tricolored blackbirds fledged in every survey year, and continue to contribute to the species' large population numbers and its persistence.

G. Inaccuracies in the Petition

In determining whether emergency listing is appropriate and whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted, the Fish and Wildlife Service cannot simply accept the claims made in the petition. This is particularly the case where, as here, the petitioner engages in both incomplete presentation of scientific information and misinterpretation or misrepresentation of such information. In such cases, the Service is obligated to conduct its own review and assessment of available data and analyses rather than rely on the petition.

Incomplete presentation of scientific information in the petition is illustrated in section 5.0 with respect to tricolored blackbird abundance. The section includes a quotation from a secondary source describing certain findings reported by Neff in his 1937 publication, and a lengthy description of the summed data from the 2008, 2011, and 2014 statewide survey efforts (CBD 2015:27-28). But the petition does not even reference the many other data and analyses that must be taken into account when assessing the size and distribution of the tricolored blackbird population (for example, from DeHaven 1975; Beedy et al. 1991; Beedy and Hamilton 1997; Humple and Churchwell 2002). It also does not make reference to the summed data set out in Kelsey (2008) and Kyle and Kelsey (2011). These works are referenced in citations in the petition, but they are absent from the petition despite their direct relevance in the section of the petition addressing the abundance of the species.

Misinterpretation or misrepresentation of scientific information occurs where the petition draws conclusions that are not supported by the literature and underlying analyses cited. This occurs, for example, where the petition cites Neff (1937) and Meese (2014) for the proposition that "the entire global population of Tricolored Blackbirds counted during surveys is less than half the size of a single colony that was reported in 1934" (CBD 2015:49). The statement is inaccurate, in part, because the statewide survey does not constitute a census of "the entire global population" of the species. Rather it is a survey of only a portion of the species' known range; for example, excluding areas outside California, excluding counties within California that are known to be inhabited (such as Imperial and Siskiyou counties), and only sampling a fraction of the available

habitat areas in other counties within California. It also does not reflect the uncertainties associated with the data that were reported in the 1930s and more recently.

These and other inaccuracies in the petition are exacerbated by the poor scientific quality of much of the literature on the tricolored blackbird. This literature, which predominantly takes the form of unpublished reports and published material subjected to minimal peer review, includes responsible reporting on data collection, data analyses, and discussion of pertinent findings, but also includes findings that stray far from data and analyses presented. For example, Meese (2014) makes the statement – quoted in the petition – that "[t]he results of the 2014 Tricolored Blackbird Statewide Survey show that there are far fewer birds now than in the recent past." This statement is contradicted by data reported by DeHaven (1975) for late 1960s and early 1970s, Beedy et al. (1991) for the 1980s, and in the prior statewide survey report by Kyle and Kelsey (2011) for the period 1999-2001. Meese, in his recent writings, is perhaps determined to disregard all prior data and focus only on the three most-recent triennial surveys. But that effort to narrow the relevant data set is inappropriate for a number of reasons, among which are the clear inadequacy of three surveys to establish a population trend and the absence of legitimate grounds to dismiss the earlier data outright.

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* These references are appended to the letter.

III. CONCLUSION

In light of the foregoing and available scientific information regarding the tricolored blackbird, we request that you decline to take emergency action with respect to the species and make a 90-day finding that the petition does not present substantial scientific or commercial information indicating that listing the species may be warranted. We look forward to continuing to work with the Service and other interested parties through the Tricolored Blackbird Working Group to take appropriate conservation actions with respect to the species.

Sincerely,

J.P. Cativiela
Program Coordinator, Dairy Cares

Cc: Ren Lohoefener, Regional Director, U.S. Fish and Wildlife Service
Charlton Bonham, Director, California Department of Fish and Wildlife

March 2, 2015

Sally Jewell, Secretary
U.S. Department of the Interior
1849 C Street, NW
Washington, D.C. 20240

Dan Ashe, Director
U.S. Fish and Wildlife Service
1849 C Street, NW
Washington, D.C. 20240

Re: Petition to List the Tricolored Blackbird as Endangered on an Emergency Basis

Dear Secretary Jewell and Director Ashe:

This letter is prepared and submitted by Dairy Cares, a coalition of California's dairy producer and processor organizations, including the state's largest producer trade associations (*Western United Dairymen, California Dairy Campaign, Milk Producers Council, California Farm Bureau Federation, and California Cattlemen's Association*) and the largest milk processing companies and cooperatives (*including California Dairies, Inc., Dairy Farmers of America-Western Area Council, Hilmar Cheese Company, and Land O'Lakes, Inc.*). Formed in 2001, Dairy Cares is dedicated to promoting the long-term sustainability of California dairies. The coalition represents California's more than 1,500 dairy farms.

Joining us in support of this letter are the California Chamber of Commerce, California Building Industry Association, California Waterfowl Association, California Grain and Feed Association, California Association of Wheat Growers, and the Rural County Representatives of California. Together, we are writing to express our vehement opposition to the petition submitted by the Center for Biological Diversity to list the tricolored blackbird as an endangered species on an emergency basis. The petition does not meet any of the relevant standards:

- The standard for emergency action, 50 C.F.R. § 424.20, authorizing listing in the event of "any emergency posing a significant risk to the well-being of fish, wildlife, or plant."

- The standard for a 90-day finding, 16 U.S.C. § 1533(b)(3)(A), "whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted."

- The standard for listing as endangered, 16 U.S.C. § 1532(6), whether the species "is in danger of extinction throughout all or a significant portion of its range."

With respect to the decision whether to list, the Secretary must make the determination "solely on the basis of the best scientific and commercial data available to him after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or foreign nation, or any political subdivision of a State or foreign nation, to protect such species, whether by predator control, protection of habitat and food supply, or other conservation practices, within any area under its jurisdiction." 16 U.S.C. § 1533(b)(1)(A). Furthermore, there is no right to petition for an emergency listing, see *Fund for Animals, Inc. v. Hogan*, 428 F.3d 1059, 1064 (D.C. Cir. 2006), and emergency listing is an extraordinary action to be taken "only when there is an emergency posing a significant risk to the well-being of [the] species," 16 U.S.C. § 1533(b)(7).

I. SUMMARY

Petitioner has not met the standard for emergency listing or the standard for a 90-day "may be warranted" finding. Therefore, the petition should be denied in toto. The following facts support denial of the petition:

- Accurate estimates of the size of the tricolored blackbird population are unavailable for any period in recorded history. That said, available data indicate that the species' abundance has been stable for the past 50 years.

- The range and distribution of the tricolored blackbird appears to have remained stable since Neff conducted range-wide surveys in the 1930s. The species appears to have adapted from pre-settlement conditions to a landscape dominated by non-native species and largely cultivated.

- Conclusions regarding colony size are tentative at best due to the potential for large colonies to skew such conclusions and the high margins of error associated with estimates of large colony size. Assuming colony size has decreased over time, there is no evidence that this places the species at greater risk of extinction. In fact, the contrary is more likely if there are a larger number of smaller, more dispersed colonies.

- There are regulatory mechanisms in place to prevent direct harm to the species in the form of coverage under the Migratory Bird Treaty Act (MBTA) and California Endangered Species Act (CESA). A federal listing offers limited additional benefits. In fact, federal listing threatens both current conservation efforts and the welfare of the species because it may encourage dairy farmers, who cultivate valuable nesting habitat for the species annually, to halt the practice.

- The petition is plagued by inaccuracies, which compel the Fish and Wildlife Service to be skeptical when assessing its merit.

II. DISCUSSION

A. Prior Regulatory Activity

On April 8, 2004, the Center for Biological Diversity filed a petition to list the tricolored blackbird as a threatened or endangered species and requested emergency listing of the species. 71 Fed. Reg. 70,483, 70,484 (Dec. 5, 2006). On May 25, 2004, the Fish and Wildlife Service determined that emergency listing was not warranted. *Id*. On December 6, 2006, the Fish and Wildlife Service issued a 90-day finding that "the petition does not present substantial scientific or commercial information indicating that listing the tricolored blackbird may be warranted." *Id*. at 70,483.

B. Status and Trend

Although data on tricolored blackbirds have been gathered for decades, survey methods for the species have varied widely and survey design has been virtually non-existent. As a consequence, while the distribution of the species is well understood, accurate estimates of the sizes of tricolored blackbird populations are not available. Below we describe the limits associated with available data regarding the status and trend of the species. We also describe the reliable guidance for conservation planning that can be drawn from those data. Available data are consistent with three hypotheses – that the range of the species has been stable over most of the past century, that the abundance of the species has been roughly stable over the past 50 years, and that the abundance of the species was likely substantially higher going back 80 years and further to the earliest recorded observations in the nineteenth century.

No one has attempted to attach confidence intervals to the rough estimates of abundance from the more formal surveys of the tricolored blackbird carried out since the 1930s, which might allow inferences regarding its status and trends; however, there is little doubt that the margins of error associated with such intervals would be large. As a consequence, "census" data available for the species are insufficient for purposes of testing more precise hypotheses about the abundance of the species. This reflects the inability of surveyors to sample the entire range of the species and the failure to adopt a probabilistic sampling procedure that would allow conservation planners to draw inductive inference about areas not sampled from areas that are sampled (McDonald 2004). In this context, reported survey results – even those that were gathered over the past 20 years – are insufficient to allow one to draw inferences about population trends. Alarmist rhetoric about a precipitous decline and imminent extinction, which dates back to the 1930s (Neff 1937:62) and has been advanced repeatedly over the subsequent eight decades (for example, see Cook and Toft 2005), is not supported by the data that have accrued from the many counting efforts that have been carried out over that extended period.

1. Limits Associated with Available Data

As is the case with many species of birds, there is anecdotal information regarding the tri-colored blackbird dating back to the mid-19th century. The petition makes reference the observation of A.L. Heermann in 1859 that large flocks of tricolored blackbirds would "darken the sky for some distance by their masses" (CBD 2015). Surely what is known of the bird's habitat requirements indicates that the extensive historic Sacramento-San Joaquin Delta and the West's largest freshwater lake, Tulare Lake, most likely supported massive colonies. While indicating that efforts to estimate the abundance of tricolored blackbirds did not commence until the 1930s (CBD 2015:3), the petition includes the bold but wholly unsupported statement that "a history of market hunting and massive loss of native marshland habitat drastically reduced the population by the mid-twentieth century," (CBD 2015:16).[1] It must be acknowledged that there are no reliable data at all regarding the size and distribution of the tricolored blackbird population before the 1930s. Claims that the birds numbered in the millions are based on surmise, not science.

An effort to assess the status of the species was undertaken in the 1930s by Johnson Neff, an employee of the Bureau of Biological Survey within the U.S. Department of Agriculture (for example, see Neff 1937). Neff properly noted that "[e]stimates of the population are notoriously inaccurate, and are subject to wide variation" (Neff 1937:65). For this reason, he provided estimates in round figures, "for the best that can be expected is a general idea of relative numbers" (Neff 1937:66). The data presented by Neff has been subject to interpretation, including in the petition. The petition cites Hamilton et al. (1995) for the proposition "Neff observed about 1,105,100 individual Tricolors" (CBD 2015:18). Perhaps inadvertently, the petitioner did not describe the time period over which Neff observed the species. The 90-day finding states that "Neff estimated between 95,000 and 737,000 breeding birds for the 5-year timeframe." 71 Fed. Reg. at 70,487. DeHaven et al. (1975a:178) concluded that Neff identified an average of more than 375,000 breeding birds, and Beedy et al. (1991:13) concluded that Neff identified an average of about 480,000 breeding birds. These statements are more precise than is appropriate, as Neff himself suggested and as subsequent investigations have borne out, given that the summing of rough estimates can propagate astonishingly high observer error.

Thirty years passed after Neff's efforts before another attempt was made to assess the status of the species. DeHaven et al. (1975a) conducted surveys over the four-year period from 1969 through 1972, attempting to sample the entire range of the species in 1971. In 1969 and 1970, they concentrated on the Central Valley and in 1972 they focused on an area from the northern San Joaquin Valley to southern Oregon (DeHaven et al. 1975a:166). The results are summarized in the 90-day finding and set out in Figure 1. "During 1969-1972, we found about 532,000 breeding birds, or about 133,000 a year" (DeHaven et al. 1975a:178).

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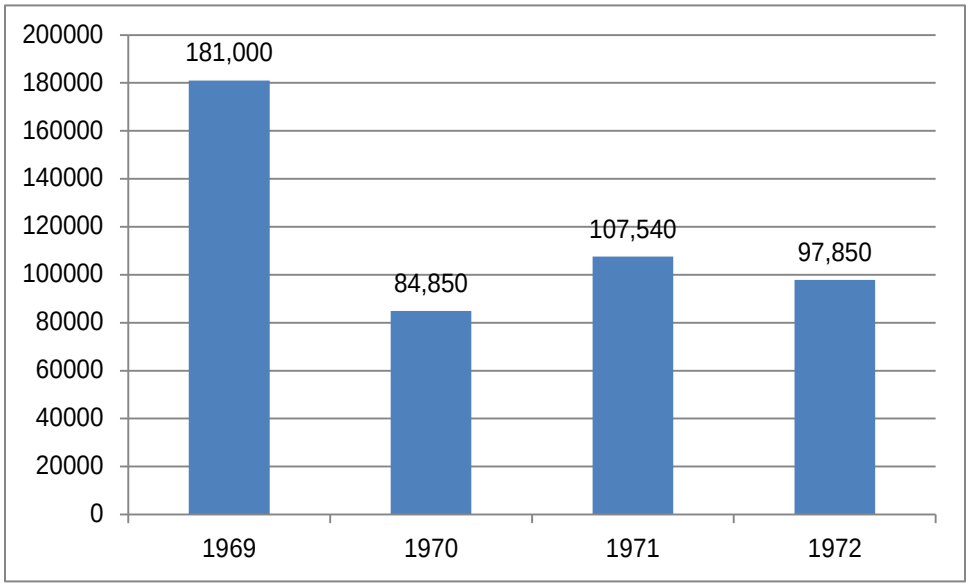
[1] Neff draws the opposite conclusion in his 1937 note, indicating that "[t]here is no indication that the Tri-colored Red-wing is losing ground," and that the evidence "indicates that the Tri-colored Red-wing as a species is thriving" (Neff 1937:80). Twenty-five years later, Orians drew the same conclusion as Neff regarding the status of the species (Orians 1961:309).

Figure 1 – Population Estimates, 1969-72



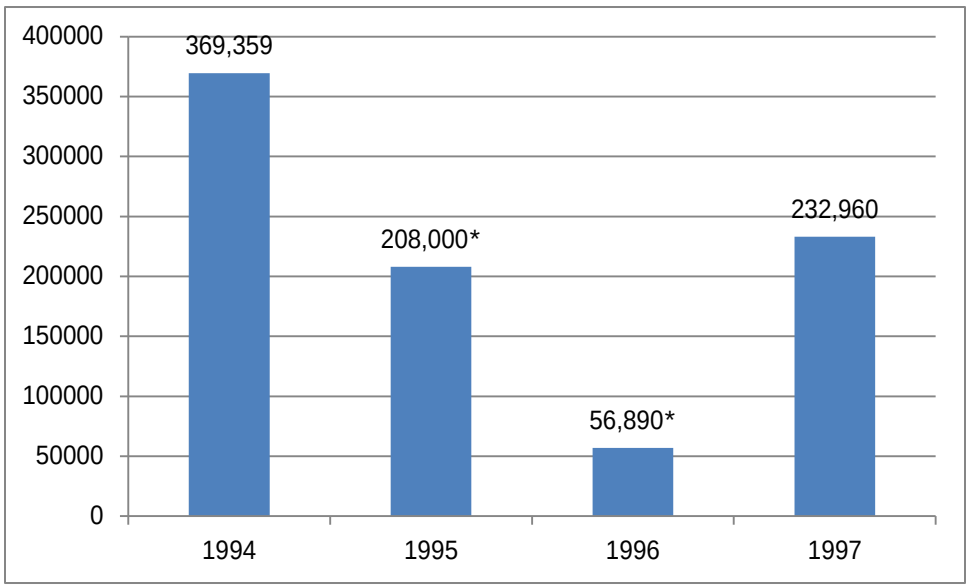
Beedy et al. (1991) described estimates of tricolored blackbirds for the 1980s, reporting an average of 51,600 birds annually. Beedy and Hamilton (1997:12) state that Beedy et al. (1991) reported a range for the same period of 35,000 to 110,000 birds (although we were not able to locate this range within the 1991 report). Those data may be the sum of observations described in the appendices to the 1991 report. Beedy and Hamilton (1997:12) caution that the population estimates for the 1980s were incomplete "because they included only sporadic surveys in the southern San Joaquin Valley…"

Beedy and Hamilton (1997) report on annual surveys conducted from 1994 to 1997 (see Figure 2). The authors indicate the effectiveness of the 1994 survey was enhanced by rangewide observations of the blackbird in the preceding three years (Beedy and Hamilton 1997:13). They also describe the 1997 survey as an intensive sampling effort that occurred throughout California (Beedy and Hamilton 1997:13). They report the results of the 1994 and 1997 efforts by region and county, and caution that the 1995 and 1996 surveys did not include range-wide follow up and may have overlooked large breeding colonies (Beedy and Hamilton 1997:13). As a consequence, the authors report the survey results but discount their value. It is notable that the authors include margins of error of ±15 percent with the reported 1994 and 1997 estimates. Unfortunately, they do not describe how they arrived at the error margins.

Surveys were conducted in 1999 and 2000 and described in reports submitted to the Fish and Wildlife Service (Hamilton et al. 1999; Hamilton 2000). Surveys were carried out over a three-day period in April 1999, while a fourth day was added to the April 2000 effort (Hamilton 2000:8). In both years, further observations were added to the results from other dates within the year. The number of colonies encountered totaled 53 in 1999 and 71 in 2000 (Hamilton 2000:10). Participation by DeHaven in the 2000 survey effort was identified as the specific source for fully 15,000 individual tricolored blackbird observations, in addition to the numbers

identified by other survey participants (Hamilton 2000:11). Hamilton reported a total of 95,000 birds in 1999 and 155,000 birds in 2000 (Hamilton 2000:25).

Figure 2 – Population Estimates, 1994-97

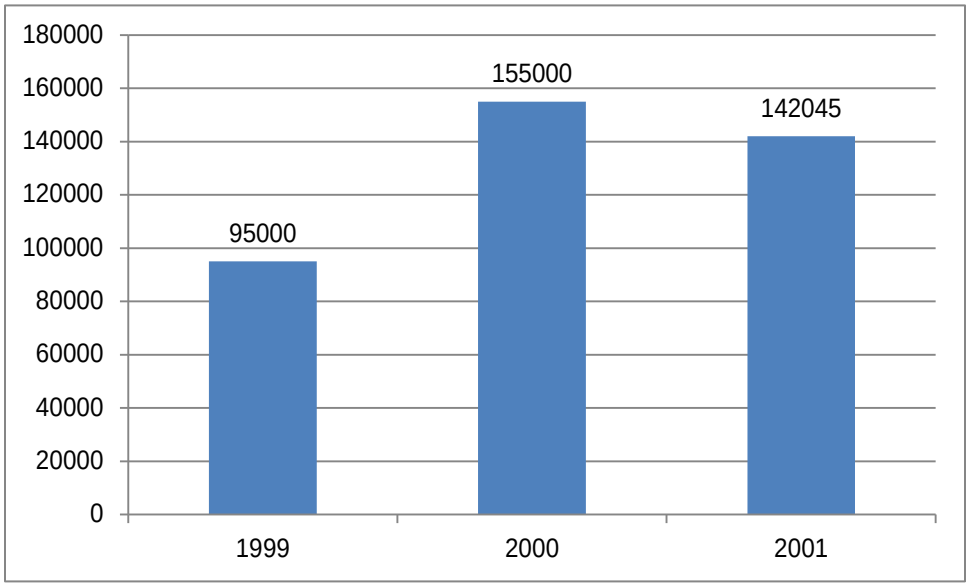


*Data characterized by Beedy and Hamilton (1997) as unreliable due to the limited survey effort during these years.

A state-wide survey was conducted in 2001 by the Point Reyes Bird Observatory with support from the Fish and Wildlife Service; the authors reported a total of 142,045 birds (Humple and Churchwell 2002:9). Whereas surveys from 1994 to 1997 took place on one day in April of each year, the 2001 survey recommended season-long sampling. That said, most surveyors submitted only a single survey report; apparently, season-long surveys were not conducted (Humple and Churchwell 2002:12).

Green and Edson (2004) coordinated a survey in 2004, which covered slightly more than 250 total sites. The survey was concentrated primarily in the Central Valley and from April 16-19, although it did include limited data collection beyond those spatial and temporal limits. Green and Edson (2004:27) report estimates by county and habitat type in table 2 of their work, providing low and high summary estimates. Notably, those summed low and high estimates range from a total of 135,385 to 312,485 birds. The wide range is disproportionately a result of a large variance in estimates for a small number of the visited sites. In particular, at one site multiple surveyors estimated between 11,000 and 102,000 individuals present, a range that reinforces the difficulty, described by Neff (1937) and others since, that is associated with estimating the real numbers of tricolored blackbirds in larger colonies.

Figure 3 - Population Estimates, 1999-2001



Multiple references are made to a 2005 survey (CBD 2015; Hamilton 2004; Kelsey 2008; Kyle and Kelsey 2011). Petitioners indicate that "[n]umbers are unknown for the 2005 survey." Kelsey (2008) and Kyle and Kelsey (2011) report a total of 257,802 birds in 2005. The tricolored blackbird portal maintained by University of California, Davis, includes a bibliography with an unpublished statewide survey by EDAW.

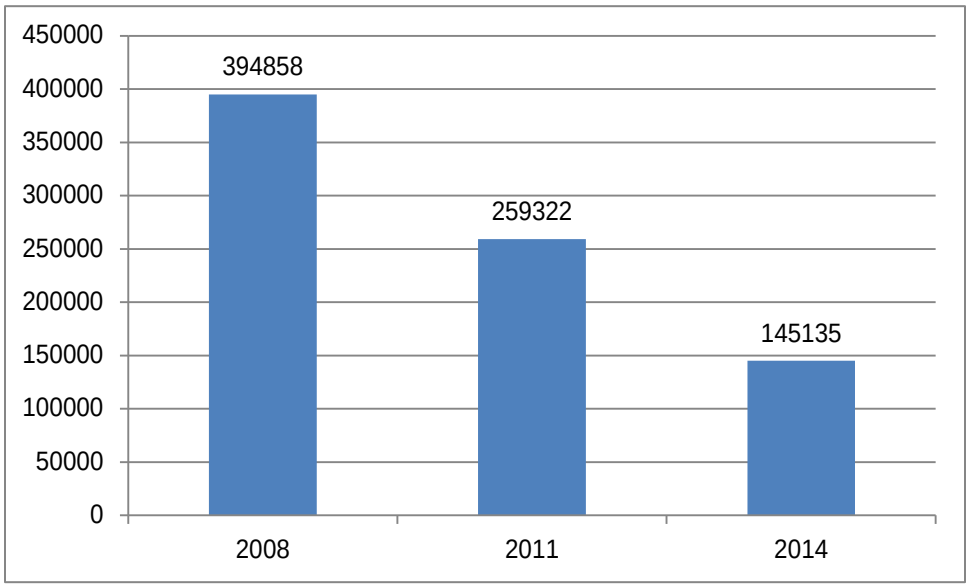
In 2008, an effort was made to improve upon past surveys. This included commencement of triennial surveys (which have since occurred in 2008, 2011, and 2014), the introduction of the online tricolored blackbird portal (to allow entries to be recorded over the internet), and the identification of county coordinators, intended to increase the quantity and quality of the survey effort. While the petition indicates that the same survey protocol was used for all three surveys (CBD 2015:21), there are a number of differences between the first two protocols and the 2014 protocol.

A survey form allowed participants to record their best estimate with minimum and maximum estimates. The 2008 and 2011 protocols state that "you are providing us with an approximation of colony size and not an exact count." No specific guidance was provided to participants regarding the development of minimum, maximum, and best estimates. Apparently, individual survey returns were combined by summing the "best estimates," subject to adjustment by Meese in circumstances where he visited the survey site (Meese 2014; Kyle and Kelsey 2011; Kelsey 2008). Those summed data are set out in Figure 4, below.

In the process of amalgamating the data into brief summary reports conveying survey results for 2008, 2011, and 2014, the petition authors have failed to convey critical information, including the ranges associated with minimum and maximum estimates, which could have readily been presented in summary form in tables or figures. One example from the 2011 survey illustrates the problem associated with failing to do so. The survey identified with number 5681 from the

database maintained on the tricolored blackbird portal (available at http://tricolor.ice.ucdavis.edu/content/ urncatalogicetrbladd-383) reported a best estimate of 8,000 with a minimum of 5,000 and a maximum of 12,000. The report also includes the following narrative: "Difficult to estimate number of birds at the dairy because colonies are asynchronous…. The actual number of birds could easily be three times higher than what I've reported."

Figure 4 – Population Estimates, 2008, 2011, and 2014



2. Lessons that Can Be Drawn from Available Data

The petition provides a skewed and garbled summary and assessment of available data pertinent to the status and trend of the tricolored blackbird. For example, although the petition includes discussion of DeHaven et al. (1975a), it fails to offer the annual and average population estimates provided by DeHaven and his colleagues (CBD 2015:18). Likewise, the petition acknowledges that Beedy and his colleagues estimated the tricolored blackbird population size was, on average, approximately 52,000 breeding adults annually during the 1980s, but it discounts the estimates from the 1980s claiming that they "were not based well enough on field surveys and so cannot be considered adequate for evaluating the population for the period addressed" (CBD 2015:18).

As discussed above, there are real limits to making any reliable inferences using the available tricolored blackbird data as a basis for informing public policy; shortcomings in the design and implementation of surveys taint even the most contemporary data. But, rather than dismiss the population estimates made by the various surveys outright, it is more appropriate to consider all available counts and estimates in the spatial and temporal context in which they were reported to evaluate the species' status and trend. Table 1 provides a summary of the relevant information (all numbers are rounded to 1000s).

Table 1 – Summary of Data regarding Populations

Source	Time period covered	Information regarding population
Neff	1931-1936	Estimated 1.5 million nests over 6 year period (Neff 1937:79) Interpreted to estimate annual abundance ranging from 95,000 to 737,000 birds (71 Fed. Reg. at 70,487) Interpreted to include observations of 1,105,000 birds over the 6 year period (CBD 2015:18)
DeHaven et al.	1969-1972	84,850 to 181,000 birds annually (average 133,000) (DeHaven et al. 1975a:177-78)
Beedy et al.	1980s	35,000 to 110,000 birds annually (average 51,600) (Beedy et al. 1991:13; Beedy and Hamilton 1997:12)
Beedy and Hamilton	1994-1997	57,000-370,000 (Beedy and Hamilton 1997:13)
Hamilton	1999-2000	95,000 and 155,000 birds, respectively, during years surveyed (Hamilton 2000)
Humple and Churchwell	2001	142,045 birds (Humple and Churchwell 2002)
Green and Edson	2004	Estimate of 135,385 to 312,485 birds during a survey concentrated in the Central Valley (Green and Edson 2004)
Kyle and Kelsey	2005	257,802 birds (Kyle and Kelsey 2011:Table 3; Kelsey 2008:Table 3)
Meese and others	2008, 2011, 2014	145,000 to 395,000 birds annually during years surveyed (Meese 2014)

The data presented by Neff can be reconciled with the notion that the tricolored blackbird population was substantially larger in the 1930s than it is today; and one could reason that Neff may have underreported the size of the population due to his constrained survey effort in relation to the species' expansive range. But, it is also possible that Neff, who surveyed over a nearly three-month period in some years, counted some number of birds (perhaps a substantial number)

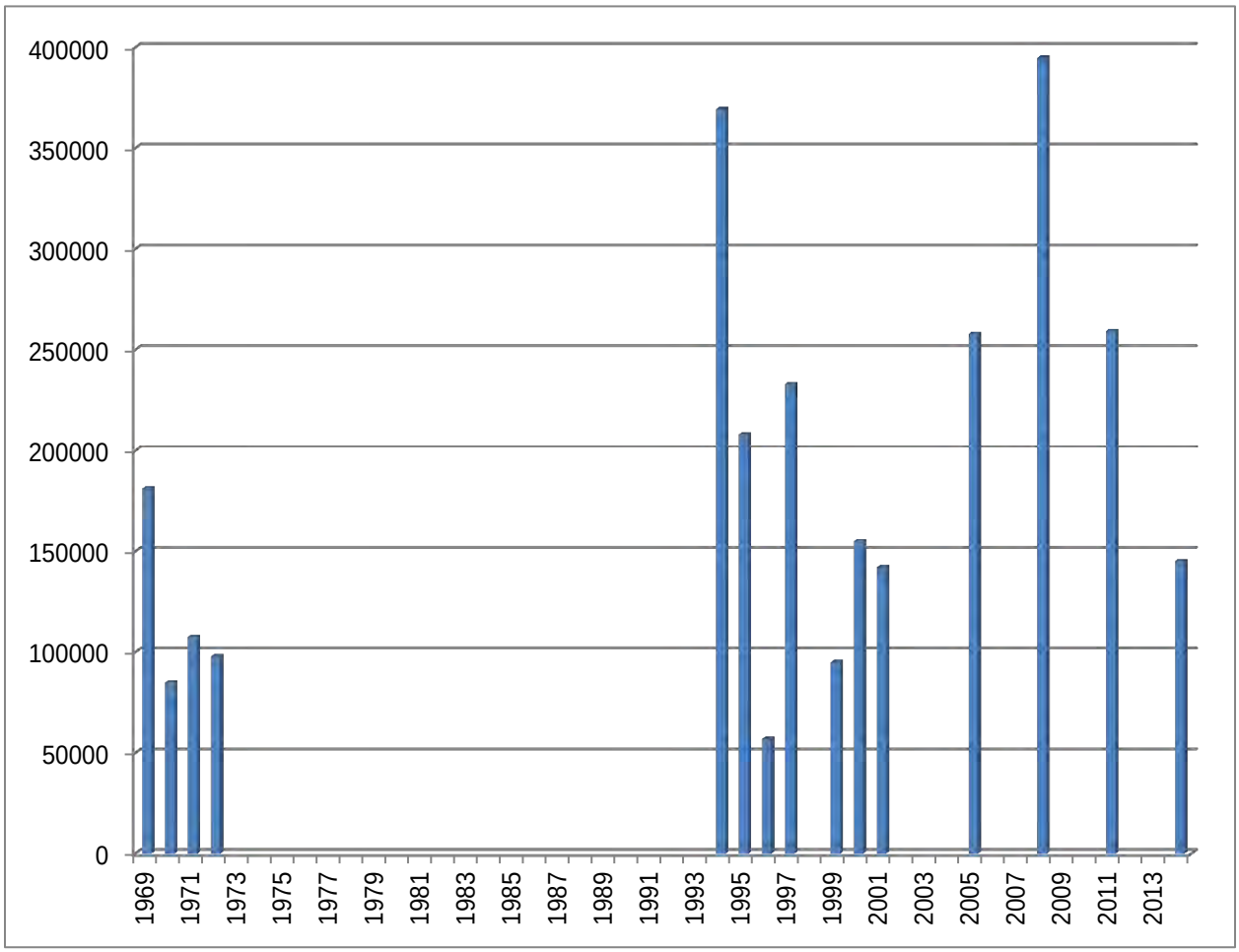
on multiple occasions. In addition, it was necessary to make estimates of very large numbers of nests. As Neff himself readily acknowledged, his estimates were bound to be inaccurate and subject to wide variations (Neff 1937:65).

The more recent data indicate that, over the past 45 years, the population of the tricolored blackbird has fluctuated from approximately 50,000 individuals to more than 400,000. As Lande (2002:19) warns those who need to estimate the sizes of populations for purposes of viability analyses, "[a]ll populations fluctuate stochastically, with coefficients of variation in annual census sizes usually in the range of about 20 to 80%." This statement usefully applies to tricolored blackbirds, with the survey data providing strong evidence of high inter-annual variability in survey numbers (Graves et al. 2013). As Graves and her co-authors suggest, it is inappropriate to draw conclusions from short-term trend data, especially data that are accompanied by high estimation error. The most recent survey numbers must be viewed in that light.

That said, the data in Table 1 from the first half of that period suggest lower population numbers than those from the second half of the period. In fact, in every year but one between 1969 and 1989, tricolored blackbird numbers reported were lower than those reported in 2014. Moreover, data from the second half of that multi-decade period do not indicate that the size of the blackbird population plummeted as the petition asserts (CBD 2015:20); instead, the data are consistent with that of a population that has fluctuated, but persists above the low of about 100,000 individuals that was recorded at the turn of the millennium (see Figure 5).

The petition contends that every report on the tricolored blackbird since the 1970s has sounded an alarm bell regarding a precipitous decline and worrisome conservation status of the species (CBD 2015:22). Some commentators predicted imminent extinction several years before the highest population estimate in decades in 2008 (see Cook and Toft 2005), and even when reporting those record survey numbers, Kelsey states (inexplicably) that "[t]here have been striking declines in the abundance of Tricolored Blackbirds over the last 70 years" (Kelsey 2008:7). But others have been more circumspect (for example Graves et al. 2013). Available data do not bear out the petitioners' narrative of diminishing numbers over decades followed by a monotonic slide toward oblivion. Rather, taken at face value, the data suggest that the species has been bouncing around at numbers fewer than 100,000 to 400,000 tricolored blackbirds for the past 50 years. It is likely that reported numbers are consistently lower than the actual population size due to geographically and temporally constrained survey conditions that miss blackbirds that may be dispersing among colony sites and/or occur outside of the survey envelopes (which have varied in site numbers and locations in every year in the survey record). Available scientific information on the tricolored blackbird's abundance contradicts the assertion in the petition that the species is in danger of extinction or likely to become in danger of extinction throughout all or a significant portion of its range.

Figure 5 – Population Estimates Reported in the Triennial Survey Reports



*Estimates provided in 1995, 1996, and 1999 were described as underestimates by the authors of the reports summarizing the data for those years. It is near certain that data for all years underestimate the population given limited survey effort, included sites visited.

C. Distribution

The tricolored blackbird occurs mostly within California, where it has been recorded in 46 counties from Imperial and San Diego in the south to Modoc and Siskiyou in the north. 71 Fed. Reg. at 70,485. The bird's range extends south into Baja California, north into Oregon and Washington, and east into Nevada. That range appears to have been stable from the time Neff conducted his studies of the blackbird to the present; the most recent survey covered portions of 41 counties, and the bird was sighted in 37 of those. That survey was limited to a three-day period (April 18-20, 2014), the locations surveyed within counties were limited (fewer than 10 locations were surveyed in 14 of the counties included in the survey), and at least two counties known to be inhabited in the past – Imperial and Siskiyou counties – were not included (Meese 2014). Furthermore, the survey protocol provided that the survey effort could be limited to 15

minutes of observation of a location (see http://tricolor.ice.ucdavis.edu/content/tricolored-blackbird-statewide-survey-protocol -- last visited Feb. 18, 2015).

Species facing imminent extinction, without exception, experience declines in population numbers *and* reduction in their geographic range and the distribution of populations within that range. Those circumstances are the inevitable outcome of habitat loss and the concomitant insularization of the remaining areas of the landscape that can be occupied by the imperiled species (Groom et al. 2005, Wilcox and Murphy 1985). Those circumstances do not apply with the tricolored blackbird. Rather, the range and distribution of the species is as described in the Service's previous 90-day finding: "The species is found throughout the majority of its historical range, with additional new breeding populations documented in Washington, Oregon, and Nevada. Therefore, we find that the petition and other information otherwise available to us does not contain substantial scientific or commercial information indicating that the continued existence of the species is threatened by the present or threatened destruction, modification, or curtailment of the species' habitat or range." 71 Fed. Reg. at 70,488.

Not only does the blackbird still occupy the majority of its apparent historical range, but geographic areas within that range, which never experienced colonies of large size, exhibit sustained occupancy by colonies of lesser size. The contemporary distribution of the blackbird includes numerous colonies that number fewer than a thousand individuals in wetland and upland circumstances that cannot support larger colonies. An instructive example of a persistent "small colony" is a demographic unit of tricolored blackbirds, which overwinters in California, but breeds in Nevada's Carson Valley; it has persisted as about 20 nesting pairs since at least 1996 on a two-acre marsh in a grazed pasture (Ammon and Woods 2008; Floyd et al. 2007). No data support the contention that colonies numbering fewer than thousands of individuals are at risk of extirpation where habitat – described as vegetation composition and structure, food resources, and defenses against predators – is available.

Despite documentation of site fidelity, reproductive success, and persistence of smaller colonies, the petition asserts that "Allee effects" (or "inverse density dependence" – CBD 2015:48) put the tricolored blackbird at the same risk of precipitous decline toward extinction that, it has been speculated, led to the demise of the passenger pigeon. No data support such an assertion. Indeed, unlike the passenger pigeon, which apparently was unable to survive the razing of eastern forests reducing its distribution and unable to tolerate massive losses due to hunting, the tricolored blackbird has shifted from the expansive low marshlands that characterized pre-settlement California and has adapted to upland circumstances dominated by non-native vegetation on a largely cultivated landscape (Orians 1961). The passenger pigeon went from vast colonies in continuous habitat to its disappearance in a few short decades; the tricolored blackbird has gone from very large colonies to smaller colonies that appear to accommodate their remaining natural habitats and take advantage of new landscape circumstances over the period of a century. The analogy of the ill-fated passenger pigeon could not be less ecologically and evolutionarily apt.

The petition contends that the tricolored blackbird "has been extirpated or nearly extirpated in portions of its former range" (CBD 2015:12). As far back as the intensive ecological studies by Gordon Orians and colleagues, it was recognized that highly dispersive colonies of widely

varying sizes occupied a diffuse mosaic of landscape circumstances shifting among habitats and resources within and between years. Subsequent researchers have characterized the species as nomadic and erratic (DeHaven et al. 1975b) and opined that perceived local or regional declines may resemble population collapses but likely are the result of the species' behavior (Hamilton 1998). To any extent that tricolored blackbirds have abandoned portions of their "former range," the species appears to have concomitantly expanded its range into adjacent or more distant areas, often taking advantage of fresh landscape circumstances, including novel physical and biotic resources. Orians (1961:309) anticipated the phenomenon to come: "Today in the Great Valley dams and levees have virtually eliminated extensive winter flooding, most of the vast marshes have been drained, and the alkali flats and prairies are now under cultivation, so that it might be expected that the Tricolored Blackbird, its system no longer adapted to present-day conditions, would be in danger of extinction … [h]owever, the attributes of the social system which adapted it to former conditions have actually pre-adapted it to agriculture."

D. Population Structuring

The petition makes much of the purported long-term decline in average colony size. Graves et al. (2013) report a 63 percent decline in average colony size from 1935 to 1975. At the same time, they report no decline from the 1970s to 2009; a finding the petition explicitly and implicitly disputes. Meese (2014:11) presents only limited information regarding colony size, asserting that the 10 largest colonies represent a decreasing proportion of the tricolored blackbird population over time. It is reasonable to hypothesize that over the last century average colony size has declined, primarily due to reduction and fragmentation of wetland habitats used by the species and due to the shifting mosaic of agricultural habitats. But empirical support for this hypothesis may only be derived from analysis of the above-described data set. Colony size estimates are least reliable at the upper end of the colony-size continuum. Estimates of the sizes of colonies with greater than a thousand birds both are perforce accompanied by very large error bars and suffer from estimation techniques that are inconsistently applied across time. For example, Green and Edson (2004) estimated a single colony to be made up of between 11,000 and 102,000 individual tricolored blackbirds. That extraordinarily wide colony-size "guesstimate" compromises the integrity of any synthetic population size estimate. Furthermore, the database maintained on the tricolored blackbird portal includes many colony size estimates that are confoundingly inexact. For example, the site survey identified as number 5241 (available at http://tricolor.ice.ucdavis.edu/content/urncatalogicetrbladd-125) from 2011, reported minimum and maximum estimates of 20,000 to 60,000 individuals. Because any analysis of a species' status and population trend can only be as good as the data upon which it is based, it must be acknowledged that any inference drawn from the information presented in the petition and extant literature regarding colony size is accompanied by high (perhaps, unacceptably high) levels of uncertainty.

Even assuming that there has been a long-term decline in the proportion of the tricolored blackbird population that exists in the 10 largest colonies, or that there has been a decline in the average size of all colonies, it is not clear that this places the species at greater risk of extinction than in previous decades. The petition claims, without any support, that "bigger colonies are more successful for breeding" (CBD 2015:27). But there are reasons to expect that a larger number of smaller, more dispersed colonies may be equally or more effective as a hedge against

extinction than a smaller number of large colonies. One reason is that dispersed blackbird populations may be less prone to extreme, stochastic environmental events – flooding, fire, or disease outbreaks -- that might result in mortality or reproductive failure (see Primack 2006). In light of the foregoing, the petition has failed to establish based on available scientific information that, due to changes in the structure of the tricolored blackbird population(s) over time the species is in danger of extinction or likely to become in danger of extinction throughout all or a significant portion of its range. Available information contradicts that assertion. The species has exhibited relative stability in numbers over a several-decades-long period. The numerical stability of the tricolored blackbird is attributable at least in part to the contemporary distribution of the species, spreading the risk of extinction across many colonies inhabiting a wide and varied landscape under natural and managed conditions.

E. Regulatory Mechanisms

The tricolored blackbird is protected under the Migratory Bird Treaty Act (MBTA). The MBTA makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations. 16 U.S.C. § 703.

The tricolored blackbird is listed as endangered under the California Endangered Species Act (CESA). It was added to the list in December, 2014, on an emergency basis by the California Fish and Game Commission. Fish and Game Code section 2080 prohibits take of any species that the Commission determines to be endangered or threatened. Fish and Game Code section 86 defines take to mean "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Cal. Fish & Game Code § 86.

F. Conservation Efforts

In 2004, a group composed of agricultural organizations, other landowner groups, wildlife and conservation agency representatives, tricolored-blackbird researchers, and conservation organizations convened the Tricolored Blackbird Working Group. The purposes of this Working Group have been to improve human understanding of the species, advance efforts to improve habitat for the species, and to address the conservation challenges posed by tricolored blackbirds that nest in silage fields on dairy farms. The Working Group developed and adopted a Conservation Plan for Tricolored Blackbird in 2007, which was updated in 2009. That document has guided activities of the Working Group and on the ground conservation efforts to improve habitat for the species. Those efforts are important to recognize as they illustrate the commitment of agency and stakeholder groups to pursuit of meaningful conservation of tricolored blackbirds through land use adjustments.

Regulated interests participate in voluntary conservation efforts in order to seek win-win solutions. Listing the tricolored blackbird threatens to undermine Working Group efforts to the detriment of the species. "Because tricolors completely overlap private property in the Central Valley, listing them as endangered would be disruptive and counterproductive" (Hamilton 2000:5). This is the case because the species is dependent to a substantial degree on artificially created nesting habitat to reproduce. Dairy farmers voluntarily establish such nesting habitat on

their lands. Through changes in planting and harvesting decisions, the farmers can avoid attracting tricolored blackbirds to their lands and also avoid liability for take. Although listing the species may prohibit isolated incidents of nest destruction, it is likely to do more harm than good by leading to a long-term decline in the availability of nesting habitat.

Nonetheless, the petition documents, with unsubstantiated detail, annual events in which agricultural habitats are disturbed, degraded, or destroyed by inopportune cutting of all or parts of silage fields. It is alleged that these events render such habitats unsuitable and account for very substantial losses of nests and offspring. But not explicitly reported in the petition are the records of birds successfully fledged from breeding colonies in agricultural fields. Those blackbirds from agricultural fields exist in every colony count and every survey report over the past 50 years. Absent regulatory prohibitions against take, productive agricultural habitats have produced a substantial portion of the tricolored blackbirds fledged in every survey year, and continue to contribute to the species' large population numbers and its persistence.

G. Inaccuracies in the Petition

In determining whether emergency listing is appropriate and whether the petition presents substantial scientific or commercial information indicating that the petitioned action may be warranted, the Fish and Wildlife Service cannot simply accept the claims made in the petition. This is particularly the case where, as here, the petitioner engages in both incomplete presentation of scientific information and misinterpretation or misrepresentation of such information. In such cases, the Service is obligated to conduct its own review and assessment of available data and analyses rather than rely on the petition.

Incomplete presentation of scientific information in the petition is illustrated in section 5.0 with respect to tricolored blackbird abundance. The section includes a quotation from a secondary source describing certain findings reported by Neff in his 1937 publication, and a lengthy description of the summed data from the 2008, 2011, and 2014 statewide survey efforts (CBD 2015:27-28). But the petition does not even reference the many other data and analyses that must be taken into account when assessing the size and distribution of the tricolored blackbird population (for example, from DeHaven 1975; Beedy et al. 1991; Beedy and Hamilton 1997; Humple and Churchwell 2002). It also does not make reference to the summed data set out in Kelsey (2008) and Kyle and Kelsey (2011). These works are referenced in citations in the petition, but they are absent from the petition despite their direct relevance in the section of the petition addressing the abundance of the species.

Misinterpretation or misrepresentation of scientific information occurs where the petition draws conclusions that are not supported by the literature and underlying analyses cited. This occurs, for example, where the petition cites Neff (1937) and Meese (2014) for the proposition that "the entire global population of Tricolored Blackbirds counted during surveys is less than half the size of a single colony that was reported in 1934" (CBD 2015:49). The statement is inaccurate, in part, because the statewide survey does not constitute a census of "the entire global population" of the species. Rather it is a survey of only a portion of the species' known range; for example, excluding areas outside California, excluding counties within California that are known to be inhabited (such as Imperial and Siskiyou counties), and only sampling a fraction of the available

habitat areas in other counties within California. It also does not reflect the uncertainties associated with the data that were reported in the 1930s and more recently.

These and other inaccuracies in the petition are exacerbated by the poor scientific quality of much of the literature on the tricolored blackbird. This literature, which predominantly takes the form of unpublished reports and published material subjected to minimal peer review, includes responsible reporting on data collection, data analyses, and discussion of pertinent findings, but also includes findings that stray far from data and analyses presented. For example, Meese (2014) makes the statement – quoted in the petition – that "[t]he results of the 2014 Tricolored Blackbird Statewide Survey show that there are far fewer birds now than in the recent past." This statement is contradicted by data reported by DeHaven (1975) for late 1960s and early 1970s, Beedy et al. (1991) for the 1980s, and in the prior statewide survey report by Kyle and Kelsey (2011) for the period 1999-2001. Meese, in his recent writings, is perhaps determined to disregard all prior data and focus only on the three most-recent triennial surveys. But that effort to narrow the relevant data set is inappropriate for a number of reasons, among which are the clear inadequacy of three surveys to establish a population trend and the absence of legitimate grounds to dismiss the earlier data outright.

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* These references are appended to the letter.

III. CONCLUSION

In light of the foregoing and available scientific information regarding the tricolored blackbird, we request that you decline to take emergency action with respect to the species and make a 90-day finding that the petition does not present substantial scientific or commercial information indicating that listing the species may be warranted. We look forward to continuing to work with the Service and other interested parties through the Tricolored Blackbird Working Group to take appropriate conservation actions with respect to the species.

Sincerely,

J.P. Cativiela
Program Coordinator, Dairy Cares

Cc: Ren Lohoefener, Regional Director, U.S. Fish and Wildlife Service
Charlton Bonham, Director, California Department of Fish and Wildlife

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Status of Tricolored Blackbirds in Nevada

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INTRODUCTION

A close relative of the Red-winged Blackbird (*Agelaius phoeniceus*), the Tricolored Blackbird (*A. tricolor*) shares the Red-winged's habit of nesting in marshy areas and foraging in nearby pastures, feedlots, meadows, and agricultural fields (Beedy and Hamilton 1999). Unlike its relative, though, the Tricolored Blackbird has a restricted distribution that is centered around the Central Valley of California, with small satellite populations scattered through the Pacific Northwest and the western parts of the Intermountain West. Throughout most of its California range, the Tricolored Blackbird is a year-round resident, but the more northern populations and the only known Nevada population are migratory. The species nests colonially, often in close proximity to other blackbirds, including the Red-winged, the Yellow-headed (*Xanthocephalus xanthocephalus*), and the Brewer's Blackbird (*Euphagus cyanocephalus*).

Tricolored Blackbird populations have been in rangewide decline, with over half of the global population estimated to have been lost between the 1930s and 1970s (DeHaven et al. 1975); other estimates of population losses during the 20th century are even higher (Beedy et al. 1991, Shuford and Gardali 2008). The population declines did not involve a significant range reduction, but mostly a decline in numbers within the historic range. As a result, the species has been recognized by the U.S. Fish and Wildlife Service as a species of conservation concern, by the California Department of Fish and Game as a species of special concern (Tricolored Blackbird Working Group 2007), and by Nevada Partners in Flight as a conservation priority species (Nevada Partners in Flight, *in prep.*).

The purpose of this article is to summarize our current knowledge about the species' status in Nevada based on recent surveys of the only colony known to breed in the state and explorations of other potential habitat for the species. We thank Bill and Beth Clark, the Nevada Natural Heritage Program, and the Nevada Department of Wildlife for their help in preparation of this manuscript. The study was funded by the U.S. Fish and Wildlife Service, Nevada Fish and Wildlife Office, and the field work was conducted by Jim Woods.

METHODS

In the spring and summer of 2006, we conducted regular surveys of the only breeding colony known to occur in Nevada, in Carson Valley, Douglas County. The site is located at 1442 m elevation and consists of an approximately 4 ha permanent agricultural return flow pond with cattail (*Typha* spp.) and bulrush (*Scirpus* spp.) dominated emergent vegetation and an approximately 0.5 ha patch of shrub willow (predominantly *Salix exigua*) adjacent to the pond. The surrounding landscape consists of agricultural areas that include pastures, hayfields, and return flow marshes, a dairy feedlot, state and county roads, and rural residences. The site is in the historic floodplain of the Carson River, and it floods occasionally every several years in late spring. During such events, the pond and surrounding pastures become a large wetland complex for several weeks.

During each visit, the number of birds was recorded by sex, and during the nesting period, the number of active breeding territories was estimated from a distance. The colony nests on private land, and all observations were made at the fenceline, approximately 30 m from the breeding pond.

RESULTS AND DISCUSSION

The estimated total number of active breeding territories in the Douglas County colony of Tricolored Blackbirds was 18 for the 2006 breeding season (Table 1). Because nest sites were not visited, this estimate is based on the generally-held assumption that all adult females present during breeding were mated and attempted to nest at least once. Three of the 21 males (14%) present during breeding were assumed to be unmated. One of these unmated males occupied a marshy area located about 4 km away from the breeding colony throughout the breeding season. Based on the 2006 observations, the presumed peak of incubation in Nevada is at the end of May, and the peak nestling period through the first half of June.

Prior to the time when nesting evidence was observed, the total number of birds present peaked at 68 on 20 May (Table 1). This suggests that the site is used as a stopover by many birds that continue their migration on to other breeding sites. Their most likely destinations could include known breeding sites in the nearby Honey Lake Basin in Lassen County, California, and scattered locations throughout northern California, Oregon, and Washington. It is likely that these migratory populations are on a breeding schedule similar to the Nevada colony.

Perhaps the most striking observation from our surveys is the lack of Tricolored Blackbirds throughout the rest of Carson Valley, which features many other marshy areas that are visually very similar to the single Tricolored Blackbird colony site. We surveyed most of these apparently suitable sites in Carson Valley during the 2006 breeding season specifically to discover any previously unknown populations, but did not locate any additional populations. The three other, more widespread species of blackbirds, in contrast, were nesting throughout the valley. Aggressive displays between Red-winged and Tricolored Blackbirds were observed at the colony site during the peak of nesting. All three

Table 1: Breeding chronology and number of birds present at the Tricolored Blackbird colony in Douglas County, Nevada, 2006.

Date	# Males	# Females	Total	Comments
24 April	0	0	0	
27 April	0	0	0	
29 April	1	0	0	
2 May	28	12	40	
16 May	33	23	56	
18 May	37	28	65	
20 May	38	30	68	
24 May	20	15	35	Carrying nest material
31 May	25	15	40	Territorial displays
3 June	20	18	38	
8 June	20 + 1*	18	39	Carrying food
13 June	20 + 1*	18	39	Carrying food
17 June	20 + 1*	18	39	Carrying food
20 June	20 + 1*	18	39	Carrying food
28 June	20 + 1*	18	39	Carrying food

* + 1 = single unmated male observed outside of breeding colony.

other blackbird species, however, also nested in the immediate vicinity of the colony, so it is difficult to conceive that interspecific aggression alone prevents Tricolored Blackbirds from using other nearby, apparently suitable sites for nesting.

The colony in Douglas County was discovered in June, 1996, by local birders Bill and Beth Clark. Anecdotal reports from the years after the discovery indicated high counts of as many as 150 individuals, but the size of the breeding colony has been relatively consistent at approximately 20 pairs in recent years (Floyd et al. 2007). Prior to the discovery of this small colony, the species was considered a rare transient in Nevada (Alcorn 1988). Historically, the species was also reported in places outside of Douglas County, including specimens collected in the Truckee Meadows near Reno in April in the 1960s and 70s (Alcorn 1988), and an unconfirmed report of a colony in Carson City County near the U.S. Forest Service headquarters in June 1980 (references in Beedy et al. 1991). Interestingly, no reports of the species have occurred outside of the area of the known colony in Douglas County since the time of these records. Several authors describe the species as nomadic (Beedy and Hamilton 1999), even as "sheerly and illogically erratic in its seasonal movements and activities" (Neff 1942, p. 45). However, aside from occasional sightings within 15 km of the colony, the only other evidence of such movements for the small Douglas County colony that we know about are two reports of the colony having moved about 4 km when the area was flooded in 1999 and 2007 (Bill and Beth Clark, pers. comm.; Jim Woods, pers. obs.). In subsequent years, including 2008, the traditional colony site was again used for nesting by approximately the same number of breeding pairs as were observed in 2006.

Conservation of Nevada's Tricolored Blackbird colony will likely depend on the future of the known colony site and adjacent wetland areas, and land use practices in the greater landscape around the site. The absence of the species throughout the rest of Carson Valley's wetlands is currently unexplained, and protective and other conservation measures in the area of the colony site may be warranted to retain the species in the state.

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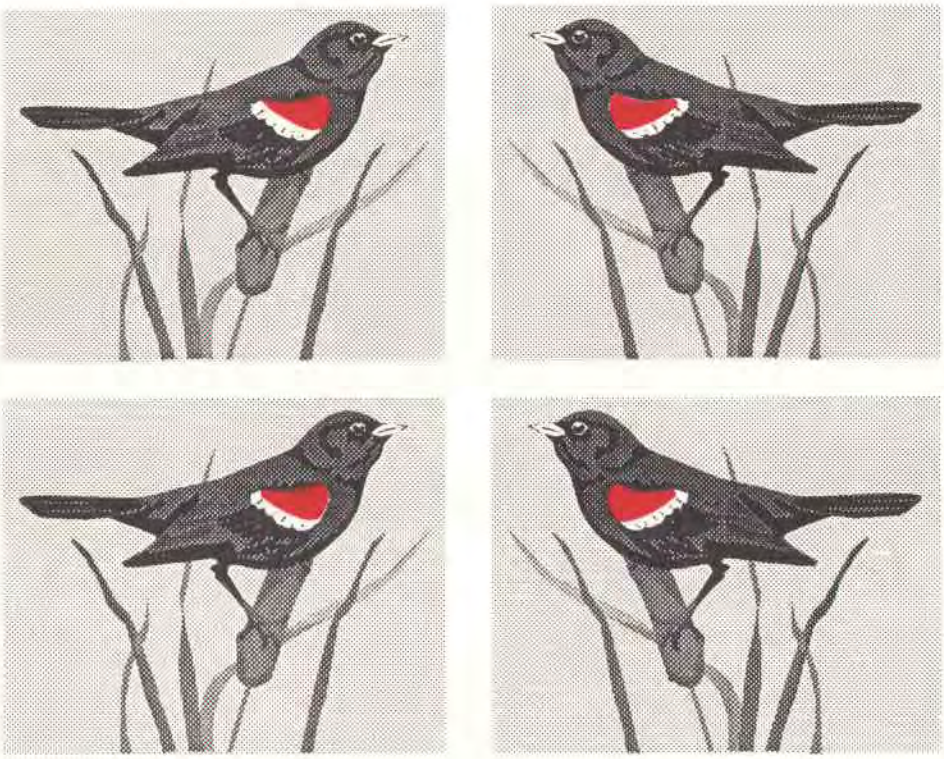
Breeding Status, Distribution, and
Habitat Associations
of the

Tricolored Blackbird

(Agelaius tricolor)
1850-1989



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Summary

The tricolored blackbird (*Agelaius tricolor*) is a highly colonial and nomadic species that is largely endemic to the lowlands of California; it also occurs sparsely in Oregon and northwestern Baja California. The colony sizes and overall populations of tricolors have declined dramatically throughout their historical range as their preferred wetland habitats have been lost. Studies conducted in the 1970s indicated a population decline of at least 50% since the 1930s. Until the present study was undertaken, no rangewide analysis had been conducted of the tricolor's status and distribution since the mid-1970s.

The purpose of this report is to describe the current and historical trends in the tricolor's breeding distribution and abundance and to assess the factors contributing to any observed changes in their populations. Another purpose is to determine whether the data justify a petition to the U.S. Fish and Wildlife Service (USFWS) to list the tricolor as a threatened or endangered species.

We conducted this study by reviewing all published literature on the species, compiling and analyzing unpublished breeding records in existing databases, contacting field ornithologists for unpublished observations of breeding colonies, and conducting field surveys in the Sacramento and San Joaquin Valleys. Comparative analyses of tricolor populations focused specifically on the 1930s, 1970s, and 1980s, because these were the only decades in which systematic observations were made throughout the tricolor's range.

The overall breeding distribution of tricolors in California has remained relatively constant from historical to present times. Colony size, however, has declined dramatically over this century. In the 1930s, colonies with 300,000 individuals were reported. Currently, no colonies with more than 10,000 individuals are known to exist. Sixty years ago, at least 62% of the colonies had between 1,000 and 10,000 adults, and almost 12% had more than 10,000 adults. In contrast, during the 1980s, 67% of the colonies had fewer than 1,000 adults, and fewer than 3% had more than 10,000 adults.

Drastic declines in the population size have accompanied the drop in colony size. The average number of breeding adults reported per year declined by 61% between the 1930s and 1970s, and fell by more than 72% between the 1970s and 1980s. In the 1930s, the tricolor's total population averaged about 480,000 adults per year. By the 1980s, the average population was estimated at about 51,600 per year, representing an overall decline of 89%. Losses of colonies in the Sacramento and San Joaquin Valleys, the heart of the tricolor's historical range, account for much of their overall population decline.

A principal factor implicated in the tricolor's population decline and the reduction or loss of colonies is elimination of wetland habitat. The vast marshes that once characterized the Central Valley have been largely eliminated. Tricolors consequently have

less nesting and foraging habitat available and nest in relatively small colonies in smaller remnant patches of wetland habitat.

Small, fragmented colonies have lower reproductive success, possibly because they are more vulnerable to predators and disturbances and are less able to compete with other species for limited wetland nesting habitat. Increased use of pesticides has also resulted in the loss of concentrated insect food sources, such as grasshopper outbreaks, thereby eliminating a critical element required for the breeding success of tricolored colonies. Increased disturbance by humans, to which tricolors are unusually sensitive, and poisonings, either deliberate or incidental, have also reduced tricolor populations.

According to criteria outlined in Section 4(a) of the federal Endangered Species Act (ESA), ample evidence exists for the USFWS to list the tricolor as a threatened or endangered species. The elimination of large tricolor colonies as recently as 1987 (Kesterson) and 1990 (Folsom-partial extirpation) indicates that factors responsible for declines in this species are still operating. Existing regulatory mechanisms are clearly inadequate to protect tricolor colonies, much less promote their recovery. Legal protection under the ESA could protect and enhance tricolored populations and would also benefit a host of waterfowl and other wetland-dependent species that have suffered population declines.

Introduction

BACKGROUND

Historical Distribution

Tricolored blackbirds (*Agelaius tricolor*) are largely endemic to the lowlands of California, but also occur sparsely in Oregon and northwestern Baja California (Neff 1937). Tricolors reached peak densities in the Sacramento and San Joaquin Valleys, but their historical range in California also included the low foothills of the Sierra Nevada and Coast Ranges from Shasta County south to Kern County, the coast from Sonoma County south to the Mexican border, and the Modoc Plateau (Baird 1870; Cooper 1875; Dawson 1923; Neff 1937, 1942; Grinnell and Miller 1944).

Natural History

Tricolors are considered the most intensely colonial of all North American passerine birds (Bent 1958; Orians 1961a, 1980; Orians and Collier 1963). Up to 20,000 nests have been recorded in a cattail marsh of 10 acres or less (DeHaven et al. 1975a). Individual nests are often built within a foot or less of each other (Neff 1937, Lack and Emlen 1939, Orians 1961a, Payne 1969, Hosea 1986).

Breeding is highly synchronized; most pairs in a colony initiate nesting within a few days of each other (Neff 1937, Orians 1961b, Payne 1969). The tricolor's highly synchronized and colonial breeding system evolved to exploit a rapidly changing environment where the locations of secure nesting habitat and rich food supplies were ephemeral and likely to change each year (Orians 1961a, Orians and Collier 1963, Payne 1969). Although tricolors are relatively adaptable in their choice of nesting substrates, they prefer to breed in freshwater marshes with dense growths of emergent vegetation (Neff 1937, DeHaven et al. 1975a).

Tricolors are highly nomadic (Neff 1937, 1942; DeHaven and Neff 1973), and flocks may suddenly appear in areas where they have been absent for months and immediately breed (Orians 1961b). Banding studies suggest that individual birds are unlikely to nest at the sites where they hatched or where they had nested the year before (DeHaven and Neff 1973, DeHaven et al. 1975b). However, breeding colonies exhibit some site fidelity and traditionally use many areas that provide critical resources, including secure nesting substrates, water, and suitable foraging habitats. Superabundant insect populations in local

areas probably stimulate the tricolor's nesting behavior, and a lack of food may explain why many seemingly suitable habitats are unoccupied by nesting tricolors (DeHaven et al. 1975a).

Tricolors typically initiate nest building in early or mid-April, and breeding activity has been observed until mid-July (Neff 1937, Orians 1961a, DeHaven et al. 1975a). Tricolors have also been recorded nesting infrequently in October and November in the Sacramento Valley, but colonies nesting in this period had low reproductive success (Orians 1960, Payne 1969).

Long-Term Population Trends

During the last years of the 19th century and first decade of this century, extensive areas of marshland in the Central Valley were drained and reclaimed for agriculture. Tricolored populations probably declined in this period (Neff 1937). However, Neff (1937) reported that in the 1930s rice cultivation and irrigation of other crops in the Central Valley had caused some regrowth of marsh vegetation in agricultural areas and improved the overall tricolored breeding habitat compared to that of earlier decades.

Surveys conducted throughout California from 1931 to 1936 indicated that tricolors nested in 26 counties, and the total breeding population was estimated at about 1,500,000 nests (Neff 1937). Each year their centers of population abundance varied; colonies were scattered over a large part of California in one year and concentrated in localized areas of the state in another. In this period, rice-growing areas in the northern Sacramento Valley were the heart of the tricolor's range, especially in Glenn County, where a colony of over 200,000 nests was reported.

Neff (1937) predicted that tricolors would continue to thrive as acreages of rice and other irrigated crops increased in the Central Valley. In the early years of California's rice industry, tricolors and other blackbird species were so abundant that they caused severe crop losses by eating seeds and ripening rice in the late summer and fall, and active poisoning and shooting programs were enacted to control their populations (McCabe 1932, Neff 1937).

For more than 30 years following Neff's (1937) surveys, no comprehensive studies were conducted on the distribution and abundance of tricolors. However, the species' reproductive and social behavior was intensively investigated during this period (Payne 1969; Orians 1960, 1961a, and 1961b; Orians and Collier 1963; Collier 1968). The largest colonies reported in the 1950s and 1960s were in Colusa County and were estimated at 80,000 and 100,000 nests, respectively (Orians 1961a).

During 1969-1972, DeHaven et al. (1975a) conducted intensive surveys of tricolored colonies in California and southern Oregon and concluded that the species' general range and major breeding areas had not changed since Neff's (1937a) study. However, DeHaven et al. (1975a) estimated that the tricolor's overall population size had declined by more than 50% since the 1930s. The continued conversion of marsh nesting habitat to agriculture and

the loss of insect food supplies resulting from increased pesticide applications were the major causes suggested for this decline (DeHaven et al. 1975a). Colony sizes had also declined, as the largest colony found by these observers included only 30,000 breeding adults, with fewer than 20,000 individuals remaining to complete their nesting cycle.

A trend of continued decline of the tricolored population was reported during the 1980s, as field ornithologists documented losses of breeding colonies throughout their range, especially in the Sacramento and San Joaquin Valleys (*American Birds* file data, Beedy and Hayworth in press, DeHaven pers. comm., Hosea 1986).

RECENT PROTECTION MEASURES

Remsen (1978) reviewed the literature and the unpublished field notes of active field ornithologists and concluded that tricolors should be considered candidates for the California Department of Fish and Game's (DFG's) list of species of special concern. His analysis also concluded that tricolors were vulnerable to disturbance and habitat destruction because of their colonial nesting behavior and their preference for wetland breeding habitats. DFG's list of species of special concern offers no legal protection, but its intent is to encourage consideration of these declining species in impact analyses, mitigation planning, and other environmental documentation. Because of their continued declines during the 1980s, DFG added tricolors to this list in May 1990 (Larsen pers. comm.).

During the late 1970s, USFWS also recognized the dramatic declines of this formerly abundant species and included the tricolor as a candidate (Category 2) for listing as a federal endangered or threatened species (54 FR 554-579, January 6, 1989). As a further measure to protect declining tricolored populations, USFWS proposed to modify two historical depredation orders (50 CFR 21.43 and 21.44) in 1988. Under these modified orders, tricolors and seven other native species may not be killed for depredation control purposes without first obtaining a federal permit (53 FR 32634-32636, August 26, 1988).

USFWS noted that no comprehensive reviews of tricolor populations had been conducted since the 1970s (Harlow and Sorenson pers. comms.). Although the species had appeared to be declining significantly during this period, USFWS had no quantitative estimates of their current populations or the extent of their overall decline. As part of an overall status review for tricolors, USFWS contracted with Jones & Stokes Associates to summarize their historical and current distribution and abundance.

OBJECTIVES

The objectives of our study were to: 1) describe historical and current trends in the tricolor's breeding distribution and abundance throughout its range; 2) evaluate the major factors contributing to observed changes in the tricolor's distribution or abundance; 3) describe the historical and current habitat associations of breeding tricolors; and 4)

recommend whether the existing biological data justify petitioning USFWS to list the tricolor as either threatened or endangered under the provisions of Section 4(a) of the Endangered Species Act of 1973 (Public Law 93-205).

Methods

DATA SOURCES

We evaluated the tricolor's historical and current status by reviewing all published literature on the species' distribution and abundance, compiling and analyzing unpublished breeding records in existing databases, contacting field ornithologists to obtain unpublished observations of breeding colonies, and conducting field surveys in the Sacramento and San Joaquin Valleys. We discuss these four methods in more detail below.

Published Literature

Neff (1937) cited 26 publications that contained specific records of tricolored breeding colonies. We reviewed all these references except for a few historical volumes, such as Audubon (1831) and Heermann (1853), that were unavailable to us. (These unreviewed historical articles were included in our database but are cited as "reviewed by Neff (1937)" in Appendices I-1 to I-44.) We also reviewed all articles describing the breeding distribution and abundance of tricolors that have been published since 1930.

Unpublished Information

We summarized all tricolored breeding records in the DFG's Natural Diversity Data Base (Warenycia pers. comm.), The Nature Conservancy's Oregon Natural Heritage Data Base (Stern pers. comm.), and Cornell University's Laboratory of Ornithology (Lynch pers. comm.). We also reviewed all available field data sheets, correspondence, and other notes compiled during the studies of DeHaven et al. (1975a, 1975b).

We acquired copies of the regional files of *American Birds* from the northern California editors (Campbell and Yee pers. comms.) and a letter summary of tricolored breeding records from southern California counties (McCaskie pers. comm.). Regional editors of this journal compile records of rare species and information on the local status of declining species, such as tricolors. Requests for unpublished information about tricolored breeding colonies were also published in the *Ornithological Newsletter*, *Oregon Birds* (Schmidt and Zeilemaker pers. comms.), and newsletters of local Audubon societies throughout California and Oregon.

Contacts with Field Ornithologists

We sent letters to 150 active field ornithologists throughout California, parts of Oregon, and other western states requesting unpublished observations of breeding tricolors. We sent reminders to those who did not respond to the first letter in 3 months. Tricolored breeding records received by December 31, 1990, were included in our database and population analyses. Although we attempted to contact all possible sources, undoubtedly some tricolored breeding records were not submitted for our review.

Field Observations

During 1987 and 1988, intensive observations were made of seven tricolored colonies in Colusa, Merced, Sacramento, and Sutter Counties (Beedy and Hayworth in press). Followup visits were made to each of these colonies at least once annually (1989 and 1990) during the breeding season (i.e., April to June) to characterize habitat conditions and the status of nesting tricolors. Between 1986 and 1990, we also made irregular visits to Glenn, Kern, Placer, San Joaquin, Solano, Sutter, and Yolo Counties to search for tricolored breeding colonies.

DATA ANALYSES

Regional Mapping

Each of California's 58 counties was assigned to one of the following regions: north coast, central coast, south coast, northeast interior, Sacramento Valley, San Joaquin Valley, and southeastern deserts (Figure 1). The boundaries of these regions were based on their geographical locations and general similarity in terms of tricolored breeding habitat. Tricolored breeding records from Oregon and Baja California were analyzed separately.

Comparability of Data between Decades

Data included in our analyses were collected by many observers over a period of about 140 years. Such data are inherently variable because of differences among observers, habitats, census techniques, and study objectives. The breeding range of the tricolor is also highly unpredictable from year to year (Neff 1937; Orians 1961a, 1961b; Orians and Collier 1963; DeHaven et al. 1975a, 1975b). Because of the variability of observers and the characteristically nomadic behavior of the species, our analyses did not focus on specific breeding localities. Instead, we summarized county, regional, and rangewide trends in tricolored distribution and abundance for each decade from 1900 until 1989.

References published before the 1930s were general and provided only brief summaries of tricolor distribution (e.g., Baird 1870; Cooper 1875, 1880; Belding 1890; Dawson 1923) these sources were not sufficient to accurately characterize the species' historical range or abundance (Neff 1937). Neff's study (1937) was the first to systematically document the status and distribution of tricolors in a significant portion of their range. No attempts were made to describe the tricolor's overall distribution during the 1940s, 1950s, or 1960s. DeHaven et al. (1975a) thoroughly analyzed the species' status and distribution in the 1970s. Thus, we included tricolored colonies from all time periods in our database but focused our comparative analyses on three decades in which systematic observations were made throughout the tricolor's range: the 1930s (Neff 1937), 1970s (DeHaven et al. 1975a), and 1980s (present study).

Definitions, Assumptions, and Calculations

Historical and current records of tricolored breeding for each decade between 1900 and 1989 were summarized by region and county to describe distributional trends, the location and status of individual colonies, and overall population abundance.

Breeding Colonies

Breeding colonies were defined as groups of tricolors nesting together at a particular location. Tricolored colonies were considered to be separate if the areas they occupied were at least 0.5 mile apart. In this analysis, breeding groups less than 0.5 mile from each other were considered subcolonies of larger, composite colonies.

We only included colonies in our database if definite observations were made of tricolored breeding activity (e.g., carrying nesting material, fresh nests with eggs, incubation, feeding young, or fledgling behavior). Where possible, we included the following data for each colony: observation date, number of breeding adults (total breeding adults, pairs, or nests), specific location, nesting habitat and substrate, stage of nesting activity, fate of the colony, and current status.

All successful colonies and colonies that failed during the egg-laying stage or later were included in our database. If groups of tricolors made nesting attempts (successful or failed) at the same location in multiple years within a decade, these groups were recorded as single colonies in our database. For example, if 5,000 and 10,000 breeding adults were recorded at the same location in 1988 and 1989, then they were counted as a single colony. (See population abundance calculations below.)

We defined the current (1991) status of each tricolored breeding colony as either extant, extirpated, or unknown. Extant colonies occupied areas where successful nesting occurred during the 1980s and where suitable breeding and foraging habitat are currently known to exist. The extirpated category included all colonies recorded since 1960 where the permanent removal of nesting habitat (or other critical resources such as water or food) was documented and for which there was no evidence of the colony renesting nearby. Because of the conspicuous nature of breeding tricolors and the extensive coverage of California and

Oregon by experienced field ornithologists, we also assumed historical colonies (i.e., those recorded before 1960) were extirpated if they were not observed during this 30-year period. Colonies found in the past three decades that lacked specific locality data or recent status information were assigned to the unknown category.

Population Abundance

Published and unpublished estimates of tricolored population abundance were included in our database in the units reported by the original observers (i.e., total breeding adults, pairs, or nests). Tricolors have a polygynous mating system where males mate with two (and occasionally more) females for an approximate sex ratio of 1:2 when averaged across an entire breeding colony (Lack and Emlen 1939, Orians and Collier 1963, Payne 1969). For comparative purposes we used the approach of DeHaven et al. (1975a) and Hosea (1986), and multiplied colony sizes reported in units of pairs or nests by a 1.5 conversion factor to approximate the total number of breeding adults in each colony.

When a range of population abundance estimates were reported for each colony (e.g., Hosea 1986), the midpoint value was used as a population abundance estimate in all calculations. Population estimates reported as "hundreds" or "thousands" were estimated at 200 and 2,000, respectively. Fewer than 10% of all colonies were reported in this fashion. Breeding reports that lacked estimates of abundance were included in the analyses of breeding colonies but omitted from the population abundance calculations.

Colonies where repeated nesting occurred in the same location during different years were counted separately in the population abundance calculations. For example, if 5,000 and 10,000 breeding adults were recorded at the same location in 1988 and 1989, a total of 15,000 adults would be counted at that colony for the decade. All abundance totals (reported and converted values) were summed to estimate the total number of breeding adults for each county and region in each decade. For comparative purposes, however, these totals were divided by the number of years of record in each decade and county to provide an estimate of the average annual abundance per decade. Thus, the colony containing 5,000 and 10,000 adults would have an average annual abundance of 7,500 adults for the decade.

Habitat Associations

Descriptions of breeding habitat and nesting substrates of colonies were included in our database (Appendices I-1 to I-44) as they were reported by individual observers. For analytical purposes, however, each colony was assigned to one of five categories based on the dominant vegetation present at the site: 1) emergent freshwater marsh dominated by tules (*Scirpus* sp.) or cattails (*Typha* sp.); 2) thickets dominated by blackberries (*Rubus* sp.), thistles (*Centaurea* sp.), or nettles (*Urtica* sp.); 3) willows (*Salix* sp.); 4) other substrates including giant cane (*Arundo donax*), mustard (*Brassica campestris*), wild rose (*Rosa* sp.), safflower (*Carthamus tinctorius*), alfalfa (*Medicago sativa*), barley (*Hordeum* sp.), rice and other irrigated crops, and orchards; and 5) data not available.

Results

NUMBER AND DISTRIBUTION OF COLONIES

A total of 696 tricolored breeding colonies were identified from California, Oregon, and Baja California (Appendices I-1 to I-44). Fewer than 20 colonies were reported in most decades; the 1930s, 1970s, and 1980s were the only periods when more than 150 colonies were observed (Table 1). The total number of reported breeding colonies declined by 37% between the 1930s and 1970s but increased by 114% between the 1970s and 1980s.

Tricolored breeding colonies have been reported in 43 counties in California since 1850 (Figure 2). Throughout this period, breeding has been observed almost every decade in each of 23 counties, concentrated primarily in the Sacramento and San Joaquin Valleys and the central and south coastal regions.

The overall tricolored breeding distribution in California has remained relatively constant, but 10 counties within their historical range did not support nesting colonies during the 1980s (Figure 2). Of these, only Yolo County historically supported large concentrations of breeding tricolors (Appendix I-41). The remaining nine historical nesting counties with unconfirmed tricolored breeding during the past included marginal areas such as the Sierra foothills (Placer and Madera), northeast interior (Siskiyou), coastal regions (Lake, Sonoma, and Ventura), northern Sacramento Valley (Tehama), and southeastern deserts (San Bernardino) (Figure 2).

After an absence of reports during the 1970s, small tricolored colonies (e.g., 2,000 breeding adults or fewer) were again reported in five historical nesting counties (Calaveras, Marin, Orange, Santa Clara, and Solano) during the 1980s (Figure 2). Similarly, small tricolored colonies were observed in four counties (Amador, Contra Costa, Lassen, and San Benito) for the first time during the 1980s.

Only two counties in southern Oregon (Jackson and Klamath) supported both historical and current tricolored breeding colonies (Figure 3). However, very small colonies (e.g., 30 breeding adults or fewer) were first observed in three northern Oregon counties (Multnomah, Umatilla, and Wheeler) during the 1980s (Appendix I-44).

Although recorded historically as a breeding species in Baja California, confirmed evidence of tricolored nesting has not been reported from this region since the 1880s (Appendix I-43). Wintering flocks of tricolors have been observed in northwestern Baja California during the past few years (Erickson and Wilbur pers. comms.).

In summary, the outline of the tricolor's California breeding distribution during the 1980s is similar to that found historically. A loss of breeding range may have occurred in Baja California, and small numbers of tricolors have expanded their range into northern Oregon.

SIZE OF COLONIES

Average colony size has declined dramatically since the 1930s (Figure 4). Of 252 breeding colonies reported during the 1930s, about 25% had fewer than 1,000 adults, almost 62% had 1,000-10,000 adults, and as much as 12% had more than 10,000 adults. In contrast, almost 67% of 183 breeding colonies reported in the 1980s had fewer than 1,000 adults, only 23% had 1,000-10,000 adults, and fewer than 3% had more than 10,000 adults.

The size of the largest breeding colonies has also declined dramatically since the 1930s (Table 2). Neff (1937) reported an immense colony of more than 200,000 nests (about 300,000 breeding adults) in Glenn County and four other colonies that exceeded 50,000 adults elsewhere in the Sacramento and San Joaquin Valleys (Figure 4).

During the 1950s and 1960s, two colonies supporting more than 100,000 breeding adults were reported in Colusa County (Table 2 and Appendix I-5). The three largest recent breeding colonies reported included 25,000 adults near Corcoran, Kings County; 30,000 adults near Knight's Landing, Yolo County, during the 1970s; and 47,000 adults at Kesterson Reservoir, Merced County, in the 1980s. All three of these large colonies were destroyed and one of the largest remaining colonies, about 10,000 adults near Folsom, Sacramento County, was eliminated during the 1990 breeding season (Appendices I-11, I-17, I-22, and I-41). Thus, it is unlikely that any colonies exceeding 10,000 breeding adults currently exist anywhere in the tricolor's range.

Although Payne (1969) reported an autumnal "colony" near Firebaugh (Fresno County) with only one nest, few very small colonies (i.e., those with less than 10 adults) were reported before the 1980s. During the 1980s, however, a few very small breeding groups were reported, including one to two pairs among nesting red-winged blackbirds at Cholame Valley pond and about seven adults feeding young along Carmel Valley Road, Monterey County, and about five individuals at San Felipe Lake, San Benito County (Appendices I-8, I-18, and I-23).

POPULATION ABUNDANCE

Average Populations per Decade

Throughout the tricolor's range, the average number of breeding adults reported per year declined by 61% between the 1930s and 1970s and by 72% between the 1970s and 1980s, for an overall decline of 89% during the 1930s-1980s (Table 3). The most

pronounced declines in average annual abundance occurred in the Sacramento and San Joaquin Valleys. Probable long-term declines occurred in the south coast and northeast interior regions, and short-term losses are also apparent in the north and central coast regions (Table 3).

Tricolors have expanded their range in Oregon since the 1930s, and the number of breeding adults may have increased in the southeastern deserts (principally western Riverside County) during the 1980s (Table 3). However, the southeastern deserts and Oregon were not surveyed intensively by Neff (1937) and these areas represent a combined total of slightly more than 5% of the average rangewide abundance of tricolors during the 1980s.

Declines in the average annual abundance of tricolors in Baja California are also likely, resulting from habitat destruction (Erickson and Wilbur pers. comms.); however, without specific tricolored breeding information, no overall abundance trends can be determined for this region.

In summary, the total tricolored population averaged about 480,000 breeding adults per year during the 1930s. The 1980s average population of known colonies was estimated at 51,600 per year, representing an overall decline of 89% since the 1930s (Table 3).

Regional Trends

North Coast

The historical data available on nesting tricolors in the north coast region are incomplete. Neff (1937) spent little time surveying this area and reported only a single colony of about 50 nests near Lakeport (Lake County) in the entire region (Figure 5 and Appendix I-12). In contrast, north coast counties received extensive coverage during the 1970s and 1980s (*American Birds* file data), when tricolor colonies were also reported from Marin and Sonoma Counties (Figures 6 and 7).

There are no historical or recent tricolor breeding records in Humboldt and Del Norte Counties, but nonbreeding individuals have been observed in large, mixed blackbird flocks in spring and fall (Barron, Erickson, and Lester pers. comms.). Similarly, breeding tricolors have not been observed in Napa County (Parmeter and Tillay pers. comms.) and have not been reported from Mendocino or Trinity Counties in the north coast region (Erickson, Harris, and Yutzy pers. comms.).

The north coast constituted a marginal part of the tricolor's historical breeding range (Grinnell and Miller 1944), and small breeding colonies (usually less than 100 adults) currently make opportunistic use of freshwater marshes near coastal pasturelands (*American Birds* file data). For example, tricolors may be present at some sites, such as Olema Marsh or Drakes Bay (Marin County), in one year, be absent for several years, and possibly not return at all (DeSante, Shuford, and Stallcup pers. comms.).

Because of the sparse populations and unpredictable occurrence of tricolored colonies in north coast counties, long-term population trends are difficult to document for this region. However, a recent loss in breeding range may be occurred in Sonoma County, where up to nine breeding colonies were observed during the 1970s but none was found in the 1980s (Appendix I-35). The current status of these colonies is unknown, but breeding tricolors have not been reported at most of them for more than a decade, which suggests that a countywide, and possibly regional, decline may have occurred.

Central Coast

As with the north coast, Neff (1937) observed few tricolored colonies in central coast counties during his studies. He reported only one colony from Santa Cruz County and four colonies in Monterey County; the largest of these had 3,000 nests (Appendices I-18 and I-31).

In the 1970s and 1980s, ornithologists found new breeding colonies in Alameda, Contra Costa, San Benito, San Luis Obispo, Santa Clara, and Santa Cruz Counties (Appendices I-1, I-6, I-23, I-27, I-30, and I-31). Tricolored colonies have not been observed historically or currently in San Francisco County (Hopkins and Murphy pers. comms.). Similarly, few recent breeding colonies have been reported from other developed portions of the Bay Area, such as San Mateo County (Metropoulos pers. comm.).

Average annual abundance comparisons for the central coast region suggested that tricolored populations may have increased in the 1970s and 1980s compared to the 1930s (Table 3). However, this apparent increase in the number of breeding colonies (Table 1) and total population abundance may be a result of improved road access and the greater number of field ornithologists who actively surveyed central coast counties during the 1970s and 1980s.

In the 1980s, Alameda, Monterey, and San Benito Counties all reported average annual totals in excess of 1,000 breeding adults (Figure 7), but regional populations have declined by almost 25% since the 1970s (Table 3). Five of 38 colonies reported from the central coast during the 1980s were extirpated (Table 4), including three colonies from Monterey County and one each from Santa Clara and Santa Cruz Counties. The combined loss represented more than 21% of the regional population total for this decade (Table 5).

South Coast

According to the notes and manuscripts of the pioneer California field ornithologist, J.G. Cooper, the tricolor was "the most abundant species near San Diego and Los Angeles, and not rare at Santa Barbara" (Baird 1870). Cooper also observed nesting tricolors in Ventura County during the 1870s, but breeding colonies apparently have not been seen there since then (Appendix I-40).

Sharp (1907) noted that tricolors were somewhat less common than red-winged blackbirds (*Agelaius phoeniceus neutralis*) but mentioned no overall decline in southern California tricolored populations. However, Willet (1933) reported that tricolors were formerly common in the lowland marshes of southern California but were rare throughout the region except in San Diego County. Neff (1937) observed tricolored colonies in Los Angeles, Orange, San Diego, and Santa Barbara Counties (Figure 5) but he did not survey this region intensively. South coast tricolored populations were historically small relative to those in the Central Valley and averaged less than 2% of the total population reported in the 1930s (Table 3).

During the 1970s, numerous tricolored breeding colonies were reported in Los Angeles, Orange, San Diego, and Santa Barbara Counties (Appendices I-14, I-18, I-25, and I-29). Only one colony of unknown size at the Union wastewater treatment plant west of Santa Maria, Santa Barbara County, was definitely extirpated in the 1980s (Table 5 and Appendix I-29). However, the reported observations in south coast counties have declined by almost 75% since the 1970s (Table 3).

Tricolors remain locally common and have adapted to urban surroundings in a few areas of San Diego County (Unitt pers. comm.). Throughout most of southern California, however, tricolors are definitely declining (Dunn, Lehman, and Willick pers. comms.).

Northeast Interior

During the early 1930s, six tricolored colonies were recorded in Shasta County (Appendix I-32), but no other historical breeding observations were reported from the northeast interior counties (Figure 5). Tricolors continued to breed in Shasta County during the 1970s, and two additional colonies were observed in Siskiyou County (Appendix I-33 and Figure 6). Small numbers of breeding tricolors were reported from Shasta County during the 1980s, and five small colonies (60 breeding adults or less) were also observed in Lassen County (Appendix I-13 and Figure 7). Breeding tricolors have not been observed in Modoc County (Summers pers. comm.).

Despite the expansion of the tricolor's breeding range into Siskiyou and Lassen Counties during the 1980s, northeast interior populations declined by more than 90% since the 1930s (Table 3). For example, the average annual abundance in this region declined from 14,325 in the 1930s to 445 in the 1980s. The largest colonies in the northeast interior region were in Shasta County and included 10,000 nests (15,000 adults) in the 1930s, 5,000 adults in the 1970s, and 1,000 pairs (1,500 adults) in the 1980s (Appendix I-32).

Thus, the regional decline in population abundance reflected reduction in both the number and total size of tricolored colonies. None of the nine colonies reported during the 1980s was known to be extirpated, but the recent status of eight of these colonies is unknown.

Sacramento Valley

The Sacramento Valley was the heart of the tricolor's breeding range in the 1930s (Figure 5), and 160 of 252 colonies (about 63%) reported statewide in that decade were from this region (Neff 1937). Four rice-growing counties, Butte, Glenn, Sacramento, and Yuba, supported more than 50,000 breeding tricolors annually during this decade (Figure 5).

During the 1930s, Sacramento Valley counties also supported some of the largest tricolored colonies ever recorded, including 150,000 nests (225,000 adults) northeast of Butte City, Butte County; 20,000 nests (30,000 adults) northeast of Williams, Colusa County; 200,000 nests (300,000 adults) east of Norman, Glenn County; 120,000 nests (180,000 adults) east of Sacramento, Sacramento County; 28,000 nests (42,000 adults) near Davis, Yolo County; and, 50,000 nests (75,000 adults) northeast of Marysville, Yuba County (Appendices I-3, I-5, I-9, I-22, I-41, and I-42).

Although no rangewide estimates of overall population abundance were made during the 1950s and 1960s, enormous tricolored colonies continued to be reported in rice-growing areas of the Sacramento Valley (Tables 2 and 3). The largest colonies observed during this period included 35,000 nests (52,500 adults) near Gridley, Butte County; 80,000 nests (120,000 adults) and 100,000 nests (150,000 adults) near the Butte Sink, Colusa County; 75,000 nests (112,500 adults) in northern Sacramento County; 70,000 nests (105,000 adults) near Madison, Yolo County; and 40,000 nests (60,000 adults) near Marysville, Yuba County (Appendices I-3, I-5, I-22, I-41, and I-42).

Long-term studies of the tricolor's nesting distribution suggested that population centers shifted unpredictably during the 1970s, but areas with consistent breeding populations included the rice-growing areas of Colusa, Sutter, and Yolo Counties and the pasturelands of Sacramento County (DeHaven et al. 1975). These four counties supported an average annual abundance of greater than 10,000 breeding adults, and four other counties (Butte, Glenn, Placer, and Tehama) averaged more than 1,000 breeding adults during the 1970s (Figure 6). In the Sacramento Valley region, only Nevada, Plumas, and Sierra Counties have no records of breeding tricolors (*American Birds* file data and Laudenslayer pers. comm.).

Throughout the Sacramento Valley, tricolored populations declined by almost 74% between the 1930s and the 1970s (Table 3). The most pronounced losses occurred in Butte, Glenn, Sacramento, and Yuba Counties (Figure 6). Despite a regional population decline during this period, several large colonies were recorded, including 20,000 nests (30,000 adults) northeast of Williams, Colusa County; 20,000 adults near Afton, Glenn County; 25,000 adults north of Clay, Sacramento County; 30,000 adults at Gilsizer Slough, Sutter County; and 25,000 adults north of Knights Landing, Yolo County (Appendices I-5, I-9, I-22, and I-41).

In the 1980s, tricolored populations in the Sacramento Valley had declined by almost 94% compared to the 1930s and by almost 77% compared to the 1970s (Table 3). The greatest losses occurred in Colusa, Glenn, Placer, Sacramento, Sutter, Tehama, Yolo, and Yuba Counties (Figure 7) (Appendices I-3, I-5, I-7, I-9, I-20, I-37, I-41, and I-42). Sporadic

nesting continues in Butte, Colusa, El Dorado, Glenn, Sutter, and Yuba Counties, but no breeding tricolors have been observed in Placer or Yolo Counties since the early 1970s (*American Birds* file data, Gaines and Beedy 1987). Small colonies (200 nests or fewer) were reported from Amador and Solano Counties during the 1980s (Appendices I-2 and I-34). The pasturelands of southeastern Sacramento County continued to be a stronghold of the tricolor's range in the Sacramento Valley region during the 1980s (Johnson, Manolis, and Mohr pers. comms.).

The largest Sacramento Valley colonies reported in the 1980s included 5,000 pairs (7,500 adults) along the Chico-Butte City Highway, Butte County; 10,000 adults at Gilsizer Slough, Sutter County; and 10,000 adults near Folsom, Sacramento County (Appendices I-3, I-22, and I-37). Of 64 tricolored colonies observed in Sacramento Valley counties in this decade, 17 are definitely extant, three were definitely extirpated, and 44 have an unknown status (Table 4). The extirpated colonies included 250 adults near Mather Field, Sacramento County, and a colony of 40-50 individuals in Vallejo, Solano County (Appendices I-22 and I-34). The large colony of 10,000 adults at Folsom was partially extirpated by dewatering of the Natomas Ditch, and the remaining 2,000 breeding tricolors are threatened by the Folsom Lake Community College, which is scheduled for construction in 1991. These extirpated colonies represented more than 10% of the average annual population reported in the Sacramento Valley region during the 1980s (Table 5).

Overall, tricolored colonies have been lost at an alarming rate in the Sacramento Valley. This decline was first observed by DeHaven et al. (1975a), and a downward trend has continued through the 1980s. A major continuing concern is the loss of all the large colonies (i.e., greater than 10,000 adults) in this historically central part of their breeding range.

San Joaquin Valley

In 1915, the San Joaquin Valley was considered the center of the tricolor's range; however, much less fieldwork had been done at that time, and tricolored populations in the Sacramento Valley were largely undescribed (Neff 1937). The San Joaquin Valley is currently extremely arid, but it is likely that greater acreages of freshwater marsh and potential tricolored breeding habitat have always existed in the Sacramento Valley (DeHaven et al. 1975).

Since the early 1900s, however, breeding tricolors have been observed in all San Joaquin Valley counties except Tuolumne County (Winter pers. comm.) and Mariposa County (Yee pers. comm.). Unfortunately, tricolored colonies that probably nested in the extensive wetlands of Tulare Lake, Kings County, were apparently never recorded. Neff (1937), however, observed large breeding colonies in the San Joaquin Valley that represented about 14% of the average annual abundance of the total population reported during the 1930s (Figure 5 and Table 3). The largest San Joaquin Valley colonies observed in this decade included 50,000 nests (75,000 adults) northwest of Merced, Merced County, and 10,000 nests (15,000 adults) near Patterson, Stanislaus County (Appendices I-17 and I-34).

Tricolored populations of the 1970s had declined in the San Joaquin Valley by only about 15% since the 1930s (Table 3), and the population there represented more than 30% of the rangewide total observed during the 1970s. DeHaven et al. (1975a) reported that tricolors predictably nested in the pasturelands of Merced County and marshes along the San Joaquin River in Stanislaus County in the San Joaquin Valley. The largest colonies reported in the 1970s included 25,000 adults south of Corcoran, Kings County; 5,000 adults along Cottonwood Creek, Madera County; near the San Joaquin River, San Joaquin County; and up to 15,000 adults near Gustine, Merced County (Appendices I-11, I-15, I-17, I-26, and I-36).

San Joaquin Valley tricolored populations declined by more than 75% between the 1930s and 1980s and by 71% between the 1970s and 1980s (Table 3). In the 1970s, Kings and Stanislaus Counties supported an average annual abundance of more than 10,000 adults, and Fresno, Kern, Madera, Merced, San Joaquin, and Tulare Counties provided habitat for more than 1,000 breeding adults annually (Figure 6). In the 1980s, however, only Calaveras, Kings, Kern, Merced, and Stanislaus Counties supported an average annual abundance of more than 1,000 adults, and no counties supported more than 10,000 adults (Figure 7). The largest San Joaquin Valley colonies reported during the 1980s included 47,000 adults at Kesterson Reservoir, Merced County, and about 11,300 adults southwest of Modesto, Stanislaus County (Appendices I-17 and I-36).

Of 39 tricolored colonies reported in the San Joaquin Valley during the 1980s, 15 are extant, six are extirpated, and 18 have an unknown status (Table 4). Five of the six extirpated colonies were at Kesterson Reservoir (Table 5), including the colony of 47,000 adults, which was the largest colony reported since the early 1960s (Appendix I-17). The other extirpated colony included 100 pairs (150 adults) at the California City Central Park, Kern County, which was destroyed by cattail removal during 1983-1985 (Chichester pers. comm.). These six extirpated colonies represented more than 80% of the breeding tricolors in Merced County and more than 56% of the total San Joaquin population reported during the 1980s.

Southeastern Deserts

The southeastern deserts have probably always represented a marginal part of the tricolor's breeding range (Grinnell and Miller 1944). Breeding colonies have never been reported from Alpine County (Harper pers. comm.), Mono County (Strauss pers. comm.), or Imperial or Inyo Counties (Mackay and McCaskie pers. comms.). However, a small nesting colony of 75 adults was observed at Jacumba within 5 miles of the San Diego/Imperial County line in 1978 and probably through the 1980s (Appendix I-25, Unitt pers. comm.). Although breeding tricolors were historically observed in San Bernardino County, no colonies have been reported since the early 1950s (Appendix I-24, Carlson pers. comm.).

Tricolored colonies were first discovered in Riverside County in 1950 and intermittent breeding was reported there through the 1980s (Appendix I-21). The largest colony, at the San Jacinto Wildlife Area, contained 3,000 pairs (4,500 adults) and was extant

in 1989. Establishment of this colony contributed an almost 300% increase in the regional tricolored breeding population since the 1970s (Table 3). However, the southeastern deserts only comprised about 4% of the total tricolored breeding population reported during the 1980s.

Oregon

Although nonbreeding tricolors have been reported in Oregon since the 1850s (Gabrielson and Jewett 1940), the first breeding colony was found north of Klamath Falls, Klamath County in 1932, by Neff (1933). Klamath County continues to be a stronghold of the tricolor's range in Oregon; small breeding colonies (500 or fewer adults) continued to be reported there during the 1970s and 1980s (Figure 8 and Appendix I-44).

In Jackson County, colonies of 1,500 adults and 1,800 adults were reported in the Bear Creek and Rogue River Valleys in 1958 and 1960, respectively (Appendix I-44). Although a colony of 500-600 adults was seen in the 1970s, no colonies larger than 30 adults were reported in Jackson County during the 1980s.

In the 1980s, very small colonies (30 or fewer adults) were first reported in northern Oregon, including colonies in the Columbia River bottomlands north of Portland, Multnomah County; near Hermiston, Umatilla County; and at the Hancock Field Station, Wheeler County (Appendix I-44 and Figure 8).

Despite a recent range extension into northern Oregon, statewide tricolor populations declined by 22% during the past decade and represented less than 1% of the total tricolor population reported during the 1980s (Table 3). Elimination of habitat at two Multnomah County colonies (Table 5), a trend of decreasing colony size, and unpredictable shifts in local population abundance may account for the tricolor's apparent decline in Oregon during the 1980s. The small statewide population combined with their unpredictable nesting behavior make future protection of tricolored breeding habitats in Oregon difficult (Marshall pers. comm.).

Baja California

Tricolored colonies were reported as "rather common" in freshwater marshes of Baja California during the late 1800s (Bendire 1875). Loss of breeding habitat may have occurred in the early 1900s; Huey (1926) only observed tricolors once during his travels through Baja California when about a dozen males of this species were seen in a large, nonbreeding flock of red-winged blackbirds at a well in Upper San Antonio del Mar in March 1925.

Few observations of tricolors in Baja California have been published since the 1920s (Appendix I-43). Some potentially suitable tricolored breeding habitat exists in Baja California, but most recent tricolored observations have been of wintering flocks (Erickson and Wilbur pers. comms.).

Nevada

Hosea (1986) reported a tricolored colony in a marsh next to the Toiyabe National Forest offices in Carson City, Nevada, during the first week of June 1980. This marsh was destroyed for the construction of a railroad museum (Hosea pers. comm., data from Debra Small). This record was not submitted for review until April 1991 and, therefore, was not included in our database or analyses.

HABITAT ASSOCIATIONS

Nesting Substrates

Almost 93% of the 252 breeding colonies reported by Neff (1937) were in freshwater marshes dominated by tules and cattails (Figure 9). Of the remaining eighteen colonies, nine were in willows, four were in blackberries, thistles, or nettles; and no data were available for five. In contrast, only about 53% of the colonies reported during the 1970s and 1980s were in tules and cattails. Similarly, an increasing percentage of tricolored colonies in recent decades were found in blackberry brambles, thistles, nettles, and other vegetation.

Neff (1937) reported tricolored colonies nesting in a variety of nonmarsh, unusual substrates, including sedge grasses, marsh weeds, nettles, briars, thistles, willows, mustard, wild rose, and grapevines. More recently tricolors have been observed breeding in other atypical substrates, including giant cane and safflower (DeHaven et al. 1975a), alfalfa and alfalfa/oat fields (Orians 1961a), tamarisk trees, elderberry/poison-oak riparian, grassland and riparian edges, saltbush, and lemon orchards (*American Birds* file data, Miller pers. comm.). However, these substrates were only used by about 4% of colonies reported in the 1970s and by about 3% of those in the 1980s (Figure 9).

Discussion

Tricolored blackbird populations have declined dramatically in this century, with reported observations dropping by almost 90% from the 1930s to the 1980s. Data from the last decade indicate these declines are continuing. The enormous breeding colonies that once typified tricolor populations in the Central Valley have been replaced by smaller, fragmented colonies. The sizes of the largest colonies reported in the 1970s and 1980s averaged about 10% of the adults contained in the largest colonies observed in the 1930s. No tricolored colonies with more than 10,000 adults are currently known.

Almost all of the 1930s data were collected by a single individual who devoted about 31 person-days annually to search for tricolor nesting colonies (Neff 1937). He also had limited access to many vast Central Valley wetland areas, such as the Butte Sink and the Yolo Basin. For this reason his overall coverage was incomplete, and the number of colonies he reported was probably an underestimate of the total breeding population present at that time.

In contrast, many professional and amateur ornithologists actively surveyed the avifaunas of California and Oregon during the 1970s and 1980s. In the 1970s, DeHaven et al. (1975a) spent 4 years (averaging 45 person-days annually) with improved access and transportation searching for tricolor colonies. In general, observers throughout the state were able to survey local areas well, providing relatively complete coverage of potential tricolor breeding areas during these decades. Thus, the specific losses of tricolored populations reported here are almost certainly underestimates of the species' overall decline from the 1930s to the 1970s and 1980s.

A principal factor implicated in the tricolor's population decline and the loss of individual colonies is elimination of wetland habitat, which drastically reduced available nesting and foraging habitat. The smaller colonies that have resulted from reduced nesting and foraging habitat may be more vulnerable to disturbance by natural predators and also less able to compete with other species for limited wetland nesting habitat. Higher rates of nesting failures and lower reproductive success have been observed in small colonies compared to large colonies (Orians 1961a, Payne 1969). Poisoning, either deliberate or indirect, and increased disturbance by humans, have also been cited as contributing to the continued population decreases. The importance of these factors to breeding tricolors is discussed below.

LOSS OF WETLAND HABITAT

Under aboriginal conditions, the Central Valley's major river systems overflowed to create extensive marshes that provided abundant breeding and foraging habitat for tricolors. Of more than four million acres of wetlands that existed in the Central Valley in the 1850s, only 561,500 (about 14%) remained in 1939 (Frayer et al. 1989). An estimated 482,800 acres of freshwater emergent marshes (about 86% of the total freshwater wetlands in 1939) were reduced by nearly 50% to only 243,100 acres by the mid-1980s. This represents an average annual loss of about 5,200 acres of freshwater emergent wetlands during this 46-year period (Frayer et al. 1989).

In the absence of the vast marshlands that once characterized the Central Valley, tricolors are often obliged to nest in marginal habitats. In the 1930s, over 90% of the tricolors nested in tule or cattail marshes, presumably the optimal nesting habitat for this species. In the 1970s and 1980s, only about 53% nested in tules or cattail marshes and an increasing percentage of tricolors were reported from nonmarsh habitats, especially blackberry thickets in Sacramento County. Rangewide, tricolored populations declined by more than 74% between these decades, which suggests that they are not successfully adapting to nesting in fragmented and disturbed marshes or in nonmarsh habitats.

Neff (1937) suggested that the adverse effects of wetland habitat losses on tricolors would be offset by the increased acreage devoted to rice cultivation and other agriculture. He predicted that tricolors could increase their populations as irrigated agriculture expanded into formerly arid areas, such as the southern San Joaquin Valley. Rice acreage in the Central Valley increased from about 435,000 acres in 1939 to almost 660,000 acres during the mid-1980s, representing an average annual net gain of about 4,800 acres (Frayer et al. 1989). Instead of expanding their populations as acreages of rice and other irrigated crops increased, the tricolor's numbers declined by almost 90% between the 1930s and the 1980s. Clearly, irrigated agriculture and rice cultivation has failed to compensate for the loss of natural marshland breeding habitat preferred by tricolors.

LOSS OF FORAGING HABITAT, FOOD SUPPLIES, AND WATER

Proximity to concentrated insect food supplies is probably the major factor in the selection of tricolor nesting sites (Neff 1937; Orians 1961a, 1961b; Payne 1969). The tricolor's nomadic and colonial behavior probably evolved as a strategy for maximizing their exploitation of concentrated and temporarily abundant insect food sources, such as grasshopper outbreaks (Orians 1961b, Payne 1969). Their colonial nesting behavior demands that they exploit locally abundant food sources while minimizing the distance of their foraging flights (Crase and DeHaven 1977).

Tricolored foraging flocks have been observed following the nomadic movements of grasshoppers (*Oedaleonotus enigma* and *Melanoplus devastator*) for many miles (Payne 1969). These grasshopper outbreaks, which were commonly observed decades ago (Neff and Wilson

1940), were most abundant in moist pastures and other grasslands. Breeding tricolors would travel up to 4 miles from their colonies to consume them (Orians 1961a).

An abundant, concentrated supply of insects is clearly important to the success of tricolor breeding colonies. Studies of their foraging behavior in Merced County found that animal matter made up 91% of the food volume of nestlings and fledglings, 56% of the food volume of adult females, and 28% of the adult male food volume (Skorupa et al. 1980). These differences reflect nutritive requirements of developing birds for a protein-rich diet to support their rapid growth. The animal taxa most often consumed (percentage incidence) in this study included ground beetles and weevils (Order Coleoptera), cutworms and loopers (Order Lepidoptera), and various flies (Order Diptera). Oats were the primary vegetable food in Merced County (Skorupa et al. 1980), whereas rice predominated in the tricolor's diet in the Sacramento Valley (Crase and DeHaven 1978).

Many formerly abundant insects in the Central Valley have now been controlled by pesticides and reduced by the conversion of wetlands, grasslands, and other native habitats to agricultural and urban uses (Stern pers. comm.). Preferred foods, such as ground beetles and grasshoppers, typically do not occur in rice fields. Thus, an increase in acreages devoted to rice cultivation and other agriculture and a decrease of grassland foraging habitat have probably resulted in use of other habitats that would demand longer searching times and yield less insect food per foraging trip (Hosea 1986). The lack of concentrated insect sources near suitable nesting sites could account for many observed tricolored nesting failures.

Although the dietary water requirements of tricolors are apparently unknown, observations indicate that most breeding colonies are situated over or near water (Neff 1937, Orians 1961a, DeHaven et al. 1975). Adult tricolors frequently drink and bathe at water sources, and Brewer's blackbirds (*Euphagus cyanocephalus*) sometimes dunk grasshoppers in water before feeding them to their young (Koenig 1985). These observations suggest that tricolors and other blackbirds require some free water. When deprived of traditional water sources, entire colonies may be abandoned (Beedy and Hayworth in press). For example, a colony of 10,000 breeding tricolors was lost when the Natomas Ditch near Folsom, Sacramento County, was diverted into an underground pipe (Holl pers. comm.).

Many adult tricolors that initially attempt to settle in a nesting colony may not remain to breed (Orians 1961a, Payne 1969), and 10-50% of colonies are at least partially or completely abandoned each year (DeHaven et al. 1975a). Unexplained abandonment of entire tricolored colonies at advanced stages of nesting has also been documented by several observers, including Belding (1890), Neff (1937), Orians (1961a), and Beedy and Hayworth (in press). Mass desertions occur most frequently in the early and late periods of the breeding season, suggesting that insect food supplies may be insufficient to support the breeding adults and their young (Orians 1961a). Loss of water supplies and increased predation could also be responsible for some unexplained tricolored nesting failures.

DISTURBANCE BY PREDATORS AND HUMANS

Tricolors usually select marshes and other nesting substrates that deter predators, such as areas near open water moats (cattails, tules, sedge grasses, and marsh weeds), natural armor (nettles, thistles, and bramble thickets), or dense vegetation (willows, poison-oak, and giant cane). Colonies that select unprotected nesting substrates, such as alfalfa, oats, and safflower, would be highly vulnerable to predation, which may explain why such sites are used infrequently by tricolors.

Although tricolors typically select secure nesting habitats, historical observers documented numerous examples of their colonies being lost to predators, including wolves (*Canis lupis*) and gray foxes (*Urocyon cinereoargenteus*) (Heerman 1853), skunks (*Mephitis mephitis*) and opossums (*Didelphis virginiana*) (Evermann 1919), Swainson's hawks (*Buteo swainsoni*) (Mailliard 1914), Cooper's hawks (*Accipiter cooperii*), burrowing owls (*Athene cunicularia*), American crows (*Corvus brachyrhynchos*), raccoons (*Procyon lotor*), and mink (*Mustela vison*) (Neff 1937). More recently, Payne (1969) observed predation of tricolored nests by feral cats (*Felis domesticus*), northern harriers (*Circus cyaneus*), barn owls (*Tyto alba*), short-eared owls (*Asio flammeus*), and yellow-billed magpies (*Pica nuttalli*). Mauser (pers. comm.) observed 3,000 breeding adults at an abandoned nest colony (Colusa National Wildlife Refuge) after persistent disturbance and predation by northern harriers and black-crowned night-herons (*Nycticorax nycticorax*). Snakes (*Thamnophis* and *Pituophis*) are also potential tricolored nest predators because they are common in marshes, can climb cattails, and have been seen robbing red-winged blackbird nests (Orians 1961a). As suitable nesting areas become fewer and smaller, repeated use and higher ratios of predators to breeding tricolors will probably result in increased loss and abandonment of colonies.

In addition to human destruction of nesting habitat, Neff (1937) reported that tricolors and other blackbirds were shot for the market. This historical practice continued until at least the 1930s, when more than 300,000 tricolored and red-winged blackbirds were marketed from the Sacramento Valley during a 5-year period. Neff (1937) believed that the combined effects of heavy hunting pressure and predation had caused only minor impacts on tricolors because the species was so abundant that even the loss of large colonies would not have a significant effect on their overall breeding populations. Until the 1960s, many tricolors and other blackbirds were deliberately exterminated to control damage to rice and other crops in the Central Valley. However, improved harvesting methods and declining populations have resulted in few recent reports of blackbird crop depredation, and no control programs are currently in effect (Clark pers. comm.).

Human disturbance can also be a factor in the loss of tricolored colonies. For example, Hosea (1986) observed that conducting a nest census caused abandonment of an entire colony within 2 days. Beedy and Hayworth (in press) also reported that human entry typically causes tricolors to abandon all or portions of their colonies, especially in those areas where nesting microhabitats are disturbed. With increased access and human populations occupying formerly remote areas, few tricolor breeding sites are completely free of the stress of occasional or frequent human visitors.

In general, colonies in large marshes have a high proportion of their nests in relatively secure, central areas, compared with colonies in small marshes and nonmarsh habitats, where many nests are situated near edges that offer relatively easy access to ground predators and humans. Current conditions dictate that most tricolors must attempt nesting in small, fragmented marshes or alternate habitats where disturbance by a single predator or human has the potential to destroy the yearly nesting efforts of thousands of breeding adults.

COMPETITION WITH RED-WINGED BLACKBIRDS

The smaller size of tricolored colonies (e.g., typically less than 2,000 adults), which has resulted from loss of wetland habitat, may adversely affect the tricolor's ability to reproduce successfully. Red-winged blackbirds, which are behaviorally more aggressive than tricolors, are normally unable to exclude tricolors from preferred nesting sites because of the overwhelming numbers of the tricolors (Orians and Collier 1963). Reduced colony size (total adults), however, may put tricolors at a competitive disadvantage, resulting in their exclusion from remaining nesting sites. The inability of small groups of tricolors to exclude redwings and other marsh-nesting birds may explain why tricolors seldom breed in small marshes or patches of nonmarsh habitat.

POISONING

Direct poisoning of tricolored colonies has been documented infrequently, but the few published examples illustrate that toxic substances have the potential to destroy entire colonies. McCabe (1932) vividly described the deliberate strychnine poisoning of 30,000 breeding tricolored blackbirds as part of an agricultural experiment. Hosea (1986) observed nestling mortalities at two colonies in Sacramento and Colusa Counties after they were subjected to aerial application of rice herbicides.

During 1986, Beedy and Hayworth (in press) observed the total nesting failure of the largest colony reported in the last two decades: 47,000 breeding adults at Kesterson Reservoir, Merced County. Between 1981 and 1986, Kesterson Reservoir's inflow consisted almost entirely of subsurface agricultural drainage water, which contained elevated concentrations of salts and numerous trace elements, including selenium. Selenium is believed to be responsible for numerous embryo deformities, and deaths of bird embryos, chicks, and adults at Kesterson Reservoir and eleswhere in the San Joaquin Valley (Ohlendorf et al. 1986, Skorupa et al. 1990).

Hundreds of dead tricolored nestlings (1-5 days old) were found on levee roads surrounding Kesterson Reservoir in 1986. Laboratory results indicated that livers salvaged from these birds had significantly higher concentrations of selenium than livers collected from red-winged blackbird nestlings in an uncontaminated area at Merced National Wildlife Refuge (Beedy and Hayworth in press, Paveglio pers. comm.).

Laboratory studies of several tricolored nestlings revealed that they died after several days on a diet containing 100 parts per million (ppm) selenium (dry weight), but a selenium dose-response relationship has not been developed for tricolors or other passerine birds (Grau et al. 1987). Collections of aquatic insects at Kesterson Reservoir indicated that many potential prey species contained selenium concentrations higher than 90 ppm (dry weight) (U.S. Bureau of Reclamation 1987). All potential tricolored nesting areas and other wetland habitats at Kesterson Reservoir were drained and filled by the U.S. Bureau of Reclamation during the late 1980s to reduce wildlife exposure to the contaminated area (Paveglio pers. comm.).

Few observers have reported direct poisoning of tricolored colonies by selenium, other trace elements, pesticides, or herbicides. However, the examples cited here reveal that a single poisoning incident can have a regional impact on tricolored populations. For example, the large colony poisoned at Kesterson Reservoir represented about 46% of the breeding adults reported in the San Joaquin Valley during the 1980s.

Recommended Action

One of the objectives of this study was to determine whether evidence exists to petition the USFWS to list the tricolor as either threatened or endangered under the ESA (Public Law 93-205). Under criteria outlined in Section 4(a) of the ESA (16 USC 1533), the Secretary of the Interior may designate a species as threatened or endangered as a result of any of the following five factors: the present or threatened destruction, modification, or curtailment of its habitat or range; overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or, other natural or manmade factors affecting its continued existence. Tricolors meet all of these criteria except the second, overutilization for commercial, recreational, scientific, or educational purposes.

Recent examples vividly illustrate the threats facing tricolors and emphasize the inadequacy of existing regulatory mechanisms. In 1989, a colony of 10,000 tricolors near Folsom, Sacramento County, was reduced to 2,000 adults when a ditch supporting dense blackberry nesting habitat was dewatered to facilitate urban development. Impacts on one of the largest remaining colonies were reviewed in an environmental impact report (EIR) in accordance with the California Environmental Quality Act. Impacts on the tricolored colony were deemed significant, but this finding did not alter the City of Folsom's dewatering action.

The remaining 2,000 breeding tricolors at the Folsom site are currently threatened by construction of Folsom Lake Community College by the Los Rios Community College District. An EIR prepared for this project failed to disclose the presence of breeding tricolors and recommended elimination of their blackberry breeding habitat (Eco-Analysts 1990). Mitigation proposals for this area would not provide suitable replacement habitat for breeding tricolors.

Despite the tricolor's declining status, in 1988 the USFWS issued a permit to shoot 2,000 tricolors with shotguns at Mather Air Force Base, Sacramento County (Sorenson, pers. comm.). This action was taken to prevent breeding tricolors from interfering with air traffic during their foraging flights.

The loss of the largest remaining colony of tricolors at Kesterson Reservoir in 1986 indicates that factors other than habitat loss, shooting, and predation are inhibiting the survival and recovery of tricolors. Investigations into the effects of selenium and other types of poisoning on tricolors have just begun in the last decade, but the results are alarming. Even the best efforts at protecting and restoring tricolor wetland habitat may be fruitless if marshes and foraging sites are contaminated with toxic levels of trace elements.

Current management practices on USFWS wildlife refuges, DFG wildlife areas, private duck clubs, and irrigated pastures pose less dramatic but potentially significant threats to tricolors. To create open water for waterfowl, dense stands of tules and cattails are routinely burned or water levels are managed to prevent their growth. For example, Gray Lodge Wildlife Area in Butte County does not support breeding tricolors, in spite of the extensive wetlands and potential foraging habitat available. If dense stands of tules and cattails were allowed to grow in some portions of that refuge, tricolors might breed there as they sometimes do at Colusa and Sacramento National Wildlife Refuges. Refraining from routine clearing or burning of blackberry thickets along irrigation canals might also increase available nesting habitat for tricolors.

Creation of new marshlands and alteration of management practices to maintain more dense habitat at federal and state refuges would benefit several other waterfowl and declining wetland species, including mallards (*Anas platyrhynchos*), gadwalls (*A. strepera*), cinnamon teal (*A. cyanoptera*), redheads (*Aythya americana*), American bitterns (*Botaurus lentiginosus*), least bitterns (*Ixobrychus exilis*), snowy egrets (*Egretta thula*), black-crowned night-herons, white-faced ibis (*Plegadis chihi*), and giant garter snakes (*Thamnophis couchi gigas*). These species have suffered declines from the loss of freshwater marsh habitat and prefer dense stands of emergent vegetation.

Most of the world's population of breeding tricolors occurs in the lowlands of California. Such a restricted distribution makes the entire species more vulnerable to local perturbations in the environment. For example, the recent drought and associated reductions in water supplies to wildlife refuges and private wetlands in the state almost certainly eliminated some of the tricolor's remaining breeding and foraging habitat.

Tricolors are clearly threatened with possible extinction, and an aggressive recovery program will be required to reverse this continuing decline. The recovery program should emphasize protection and restoration of their preferred wetland nesting and foraging habitats, vigorous protection of less preferred habitats where tricolors now extensively nest, protection and management of foraging habitats, and research and monitoring. These efforts will also benefit waterfowl and many other wetland-dependent wildlife species.

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Zeillemaker, Fred. Supervisor, refuges and wildlife. U.S. Fish and Wildlife Service, Portland, OR. September 22, 1989 - letter (Oregon) sent to Jones & Stokes Associates.

Tables

Table 1. Number of Tricolored Blackbirds Recorded in Each Region and County

Region and County	<1900		1900–09		1910–19		1920–29		1930–39		1940–49		1950–59		1960–69		1970–79		1980–89	
	Total Colonies	Total Abundance (Yrs)*	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)
Region 1. North Coast																				
County:																				
Lake									1	75** (1)							1	2,500 (1)		
Marin							1	NA (1)	1	NA									4	1,010 (4)
Sonoma															1	150 (1)	9	8,050 (5)		
Subtotal							1	NA	2	75					1	150	10	10,550	4	1,010
Region 2. Central Coast																				
County:																				
Alameda							1	250 (1)							1	15,000 (1)	7	12,425 (5)	6	3,780 (2)
Contra Costa																			5	1,288 (2)
Monterey									4	9,225 (2)					2	2,300 (2)	2	6,000 (1)	10	3,060 (3)
San Benito																			2	2,005 (1)
Santa Clara	1	NA (1)*																	6	2,155 (3)
San Luis Obispo															1	NA	4	1,400 (3)	3	293 (3)
Santa Cruz	1	NA (1)							1	750 (1)							2	490 (3)	6	1,445 (3)
San Mateo																	2	NA (1)		
Subtotal	2	NA					1	250	5	9,975					4	17,300	17	20,315	38	14,026

Table 1. Continued

Region and County	<1900		1900-09		1910-19		1920-29		1930-39		1940-49		1950-59		1960-69		1970-79		1980-89	
	Total Colonies	Total Abundance (Yrs)*	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)
Region 3. South Coast																				
County:																				
Los Angeles	2	NA (1)							1	750 (1)	1	200 (1)					1	2,500 (1)	3	178 (2)
Orange									1	375 (1)									9	3,828 (4)
Santa Barbara									1	4,500 (1)							5	2,775 (4)	2	300 (1)
San Diego	1	NA (1)																	2 (NA)	NA
Ventura	3	500 (3)							8	7,425 (4)							4	4,325 (2)		
Subtotal	6	500							11	13,050	1	200					10	9,600	16	4,306
Region 4. Northeast Interior																				
County:																				
Lassen																			6	160 (5)
Shasta	1	NA							6	28,650 (2)							1	5,000 (1)	3	1,650 (4)
Siskiyou																	2	1,015 (1)		
Subtotal	1	NA							6	28,650							3	6,015	9	1,810

Table 1. Continued

Region and County	<1900		1900–09		1910–19		1920–29		1930–39		1940–49		1950–59		1960–69		1970–79		1980–89	
	Total Colonies	Total Abundance (Yrs)*	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)
Region 5. Sacramento Valley																				
County:																				
Amador																			1	350 (1)
Butte									32	336,263 (5)					3	52,875 (3)	3	10,350 (3)	3	7,925 (2)
Colusa									20	127,763 (4)			3	101,000 (1)	9	178,225 (6)	9	63,000 (4)	7	9,769 (4)
El Dorado	1	NA															1	600 (1)	1	500 (1)
Glenn									51	555,825 (5)					7	3,530 (3)	4	26,500	2	200 (2)
Placer									2	3,750 (2)							1	3,000 (1)		
Sacramento									10	477,750 (5)			3	208,500 (1)	3	51,750 (1)	29	170,513 (5)	40	41,929 (7)
Solano									1	10 (1)									5	433 (4)
Sutter									10	49,875 (5)					1	9,000 (1)	3	32,000 (2)	3	14,000 (3)
Tehama									1	1,125 (1)							1	2,000 (1)		
Yolo									13	99,500 (7)					1	105,000 (1)	7	53,150 (3)		
Yuba									20	353,900 (7)	1	33,000 (1)	3	85,725 (1)	18	109,400			2	4,963 (1)
Subtotal	1	NA							160	2,005,761	1	33,000	9	395,225	42	509,780	58	361,113	64	80,069

Table 1. Continued

Region and County	<1900		1900-09		1910-19		1920-29		1930-39		1940-49		1950-59		1960-69		1970-79		1980-89	
	Total Colonies	Total Abundance (Yrs)*	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)
Region 6. San Joaquin Valley																				
County:																				
Calaveras															1	4,000 (1)			5	3,400 (3)
Fresno			2	400 (1)					1	150 (1)					4	11,152 (3)	4	5,621 (3)	4	3,150 (9)
Kern			1	NA (1)	1	NA (1)	1	35 (1)	3	3,075 (2)							2	3,000 (2)	6	6,965 (5)
Kings									1	3,000 (1)							1	25,000 (1)	2	2,300 (2)
Madera			1	200 (1)													1	5,000 (1)		
Merced					2	30,000 (1)			44	234,075 (5)							20	48,400 (5)	14	70,405 (8)
San Joaquin	1	NA (1)			1	38 (1)			5	6,000 (2)					3	700 (3)	4	5,540 (3)	1	300 (1)
Stanislaus					1	2,000 (1)			12	33,700 (3)							22	48,825 (4)	6	14,455 (4)
Tulare									1	3,000 (1)							1	1,500 (1)	1	150 (1)
Subtotal	1	NA	4	600	5	32,038	1	35	67	283,000					8	15,852	55	142,886	39	101,125

Table 1. Continued

Region and County	<1900		1900-09		1910-19		1920-29		1930-39		1940-49		1950-59		1960-69		1970-79		1980-89	
	Total Colonies	Total Abundance (Yrs)*	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)	Total Colonies	Total Abundance (Yrs)
Region 7. Southeastern Desert																				
County:																				
Riverside	1	NA (1)											3	750 (2)			1	750 (1)	2	4,530 (2)
San Bernadino											3	3,100 (3)	4	1,000 (3)						
Subtotal	1	NA									3	3,100	7	1,750			1	750	2	4,530
Region 8. Oregon																				
County:																				
Jackson													1	1,500 (1)	2	2,000 (2)	2	550 (2)	2	45 (1)
Klamath									1	50 (1)							2	270 (1)	3	950 (3)
Multnomah																			3	25 (2)
Umatilla																			2	50 (1)
Wheeler																			1	NA (1)
Subtotal									1	50			1	1,500	2	2,000	4	820	11	1,070
Region 9. Baja California	1	NA																		
Subtotal	1	NA																		
Total:	13	500	4	600	6	32,038	2	35	252	2,340,561	5	36,300	17	398,475	57	545,082	158	552,049	183	207,946

*Number in parentheses represents the number of years of record for each decade.

**Numbers reported as nests or pairs in Appendices I-1 to I-44 were converted to numbers of breeding adults by multiplying by 1.5 (see text).

Table 2. Largest Colony Reported Per Decade in Each Region During the Period 1900–1989

Region	<1900	1900–09	1910–19	1920–29	1930–39	1940–49	1950–59	1960–69	1970–79	1980–89
1. North Coast					75*			150	3,000	750
2. Central Coast	NA**			250	4,500			15,000	5,000	3,000
3. South Coast	300				4,500	200			2,500	1,510
4. Northeast Interior	NA				15,000				5,000	1,500
5. Sacramento Valley	NA				300,000	33,000	112,500	150,000	30,000	10,000
6. San Joaquin Valley	"Immense"	200	2,000	30	75,000			10,000	25,000	47,000
7. Southeastern Deserts	NA					2,000	500		750	4,500
8. Oregon					50		1,500	1,800	500	500
9. Baja California	NA									
Number of Colonies Reported	13	4	6	2	252	5	17	57	158	183
Largest reported per decade	"Immense"	200	2,000	250	300,000	33,000	112,500	150,000	30,000	47,000

*Numbers reported as nests or in pairs in Appendices I-1 to I-44 were converted to numbers of breeding adults by multiplying by 1.5 (see text).
**NA-data not available.

Table 3. Average Annual Abundance of Tricolored Blackbirds Recorded Per Decade in Each Region From 1900–1989

Region	1900–09	1910–19	1920–29	1930–39	1940–49	1950–59	1960–69	1970–79	1980–89	Percent Change		
										1930s–1970s	1930s–1980s	1970s–1980s
1. North Coast				75			150	4,110	253	548.0	337.3	-93.8
2. Central Coast	NA*		250	5,362			16,150	9,115	6,857	169.9	127.8	-24.8
3. South Coast	NA			7,481	200			5,357	1,346	-28.4	-82.0	-74.8
4. Northeast Interior	NA			14,325				6,015	445	-58.0	-96.9	-92.6
5. Sacramento Valley	NA			383,664	33,000	294,326	23,135	101,453	23,083	-73.6	-93.9	-77.3
6. San Joaquin Valley	600	32,038	35	68,736			7,950	58,607	16,891	-14.7	-75.4	-71.2
7. Southeastern Deserts	NA				1,033	708		750	2,265	-	-	302
8. Oregon				50		1,500	1,000	545	425	1,090.0	850.0	-22
9. Baja California	NA											
Total	600	32,038	285	479,693	34,233	296,534	48,385	185,952	51,565	-61.2	-89.3	-72.3

*NA-data not available.

Table 4. Status of Tricolored Blackbird Colonies Recorded During the 1980s During the 1989 and 1990 Breeding Seasons

Region	Total	Status of colony		
		Extant	Extirpated	Unknown
1. North Coast	4			4
2. Central Coast	38	8	5	25
3. South Coast	16	11	1	4
4. Northeast Interior	9	1		8
5. Sacramento Valley	64	17	3	44
6. San Joaquin Valley	39	15	6	18
7. Southeastern Deserts	2	1		1
8. Oregon	11	2	2	7
Total	183	55	17	111
Percent of total		30.0	9.3	60.7

Table 5. Number of Tricolored Blackbird Colonies Known to Have Been Extirpated During the 1980s

Region/County	Number of Extirpated Colonies	Total Individuals in Extirpated Colonies	Total Individuals in the 1980s			Percent of Individuals Extiprated in the 1980s		
			County	Region	Total Range	County	Region	Total Range
Central Coast								
Monterey	3	1,653	3,060			54.0		
Santa Clara	1	600	2,155			27.8		
Santa Cruz	1	750	1,445			51.9		
Subtotal	5	3,003		14,026			21.4	
South Coast								
Santa Barbara	1	NA*	–	–	–	–	–	–
Sacramento Valley								
Sacramento*	2	8,270	41,929			19.7		
Solano	1	50	433			11.6		
Subtotal	3	8,320		79,636			10.4	
San Joaquin Valley								
Kern	1	150	6,965			2.2		
Merced	5	56,700	70,405			80.5		
Subtotal	6	56,850		101,125			56.2	
Oregon								
Multinomah	2	25 + NA	25	1,070		NA**	2.3	
Total	17	68,198			207,513			32.9

*Colony at Folsom, Sacramento County, was partially extirpated during 1989-1991.

**NA - Estimate of population abundance not available.

Figures

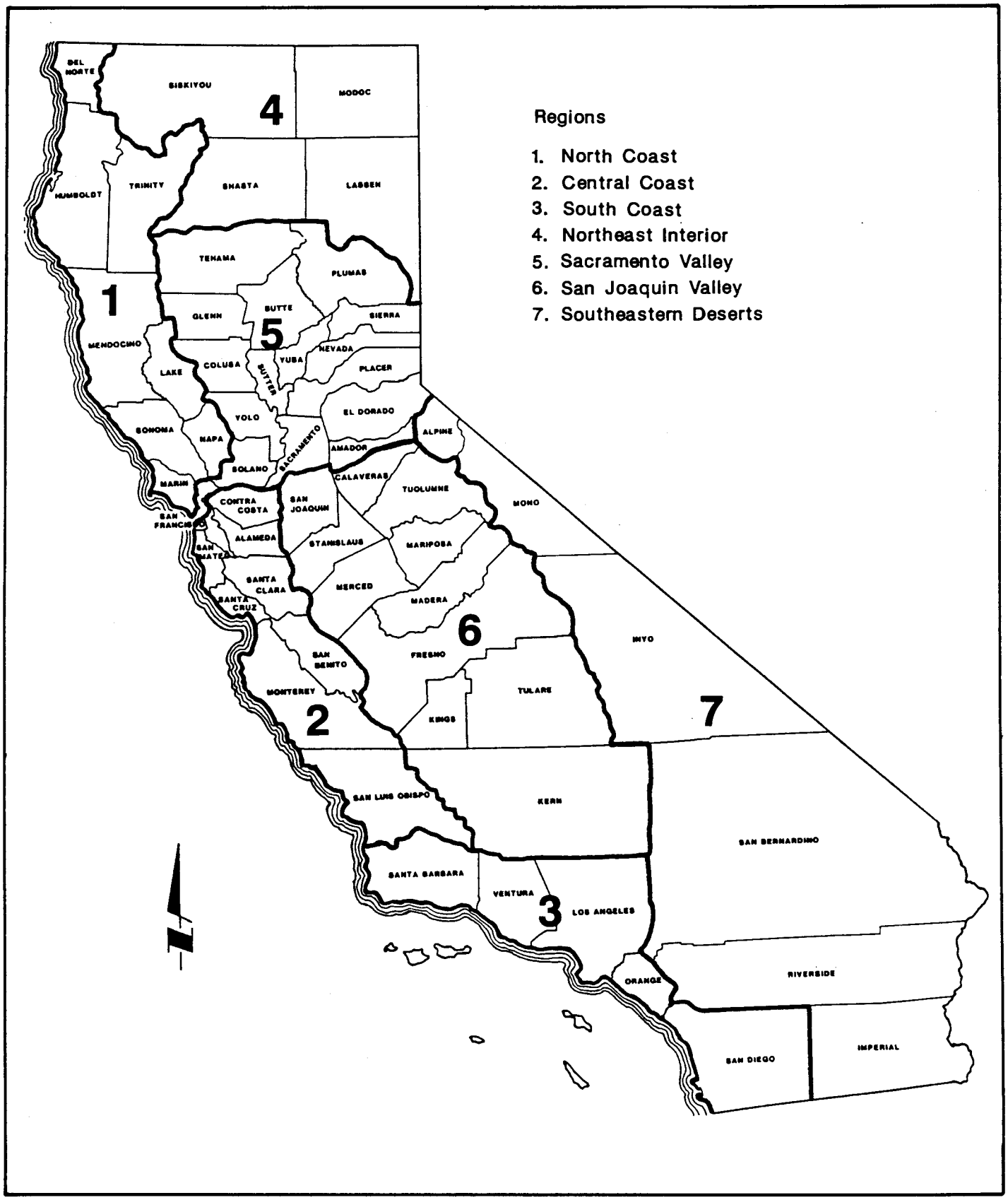


Figure 1. Regional Groupings of California Counties

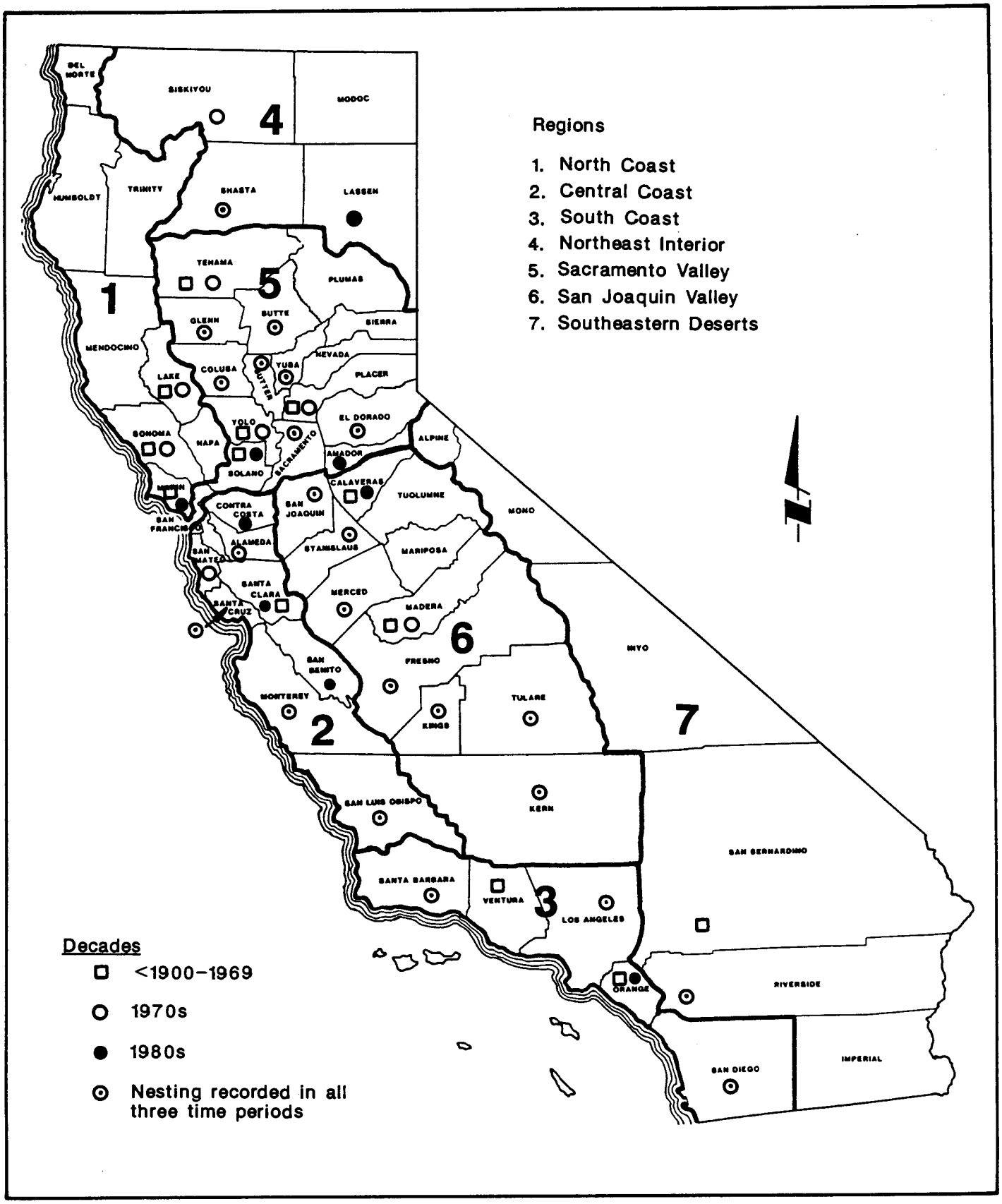
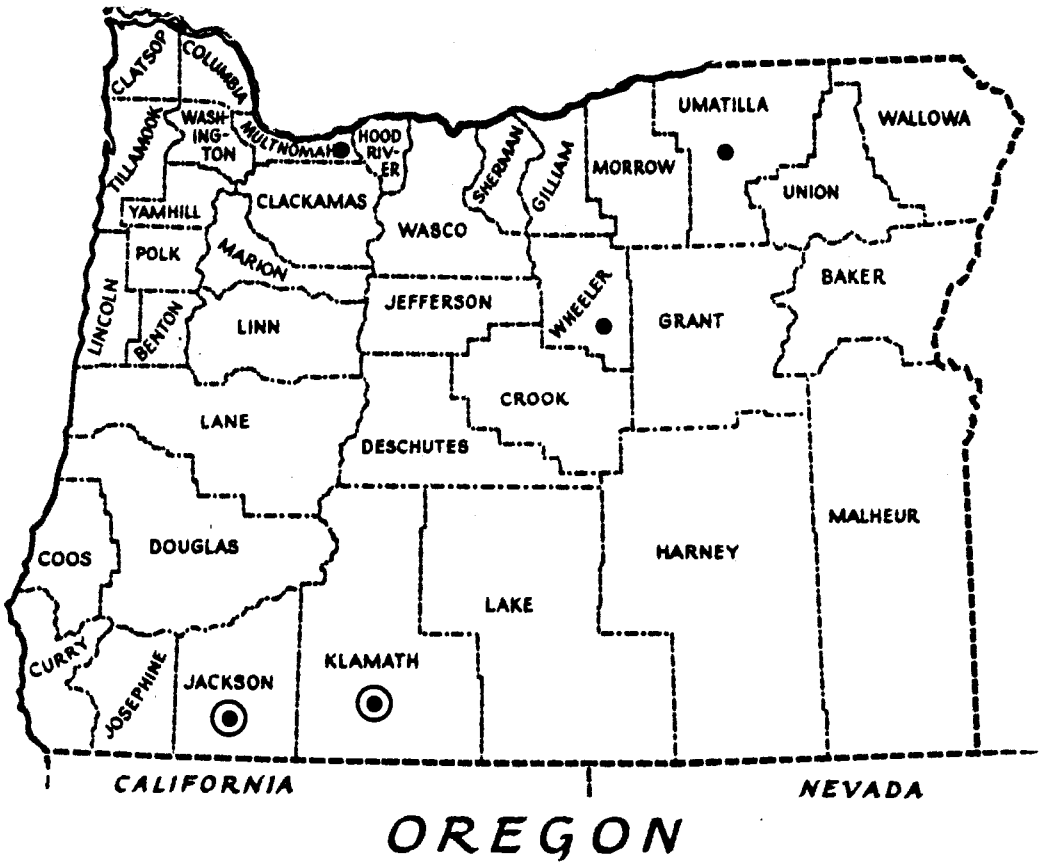


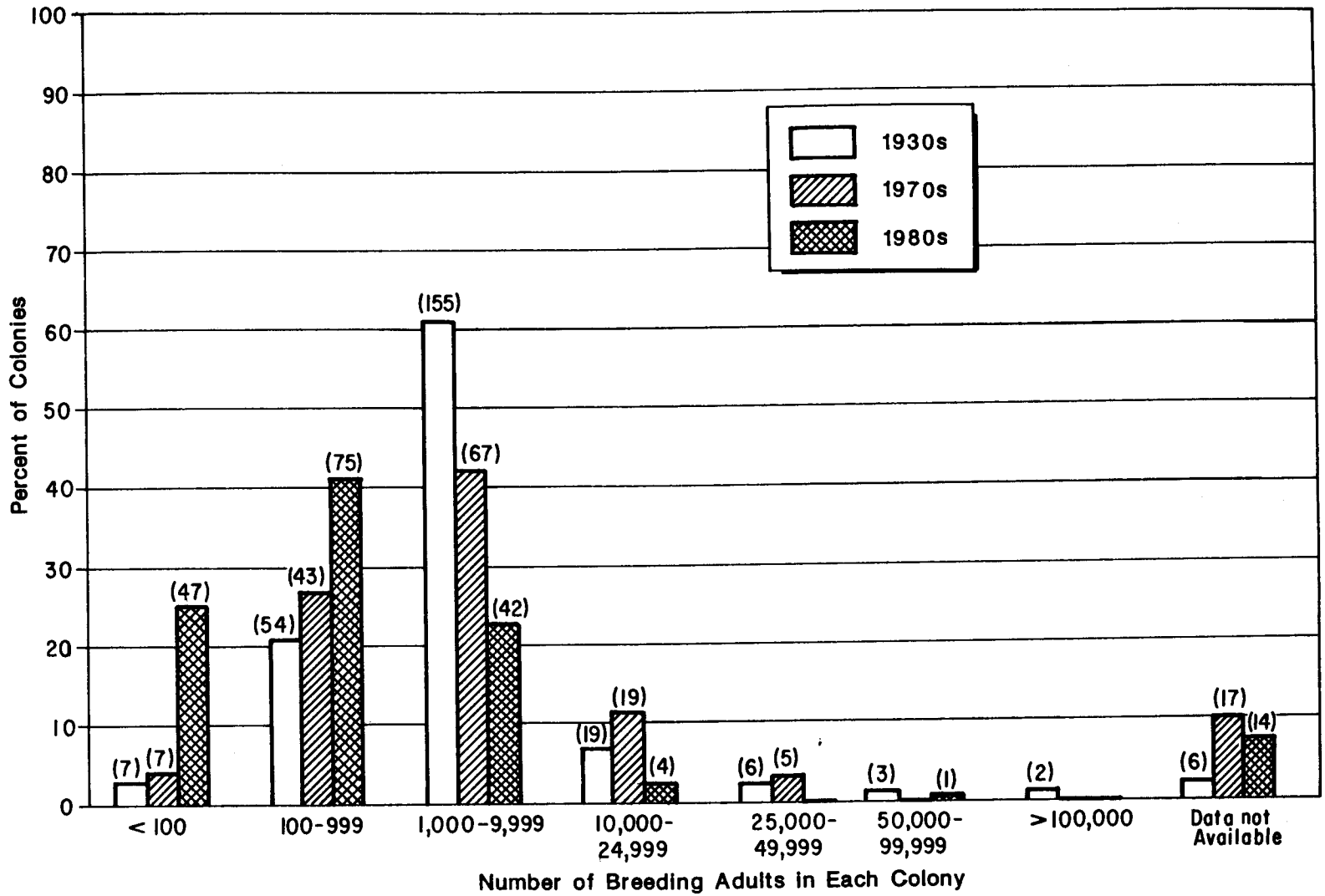
Figure 2. California Counties Where Tricolored Blackbird Breeding Colonies Were Recorded from 1900 to 1989



Decades

- □ <1900–1969
- ○ 1970s
- ● 1980s
- ◉ Nesting recorded in all three time periods

Figure 3. Oregon Counties Where Tricolored Blackbird Breeding Colonies Were Recorded from 1900 to 1989



Note: Numbers in parentheses indicate the total number of colonies reported in each decade.

Figure 4. Percentage of Tricolored Blackbird Colonies in Each Size Class During the 1930s, 1970s, and 1980s

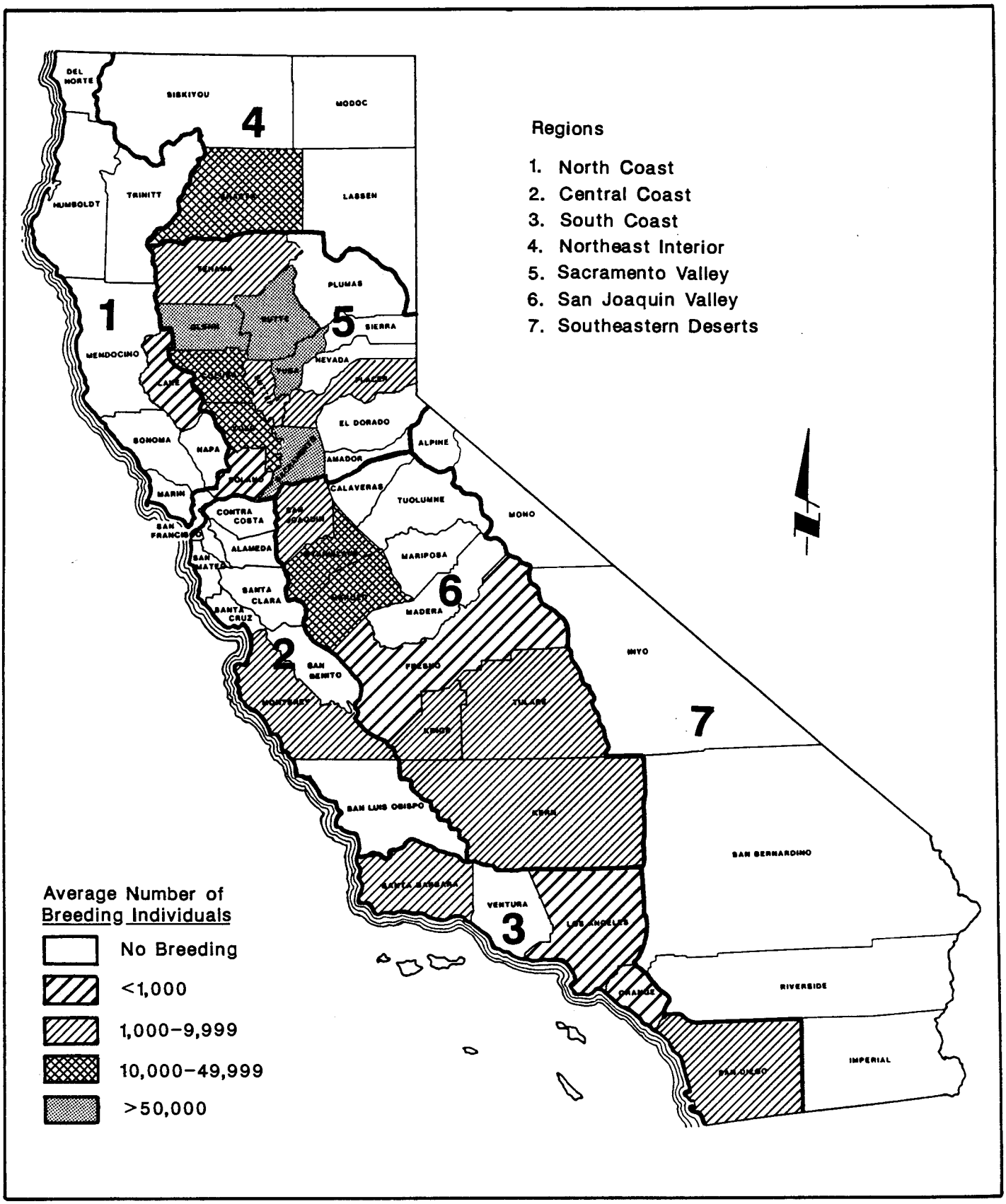


Figure 5. Average Annual Abundance of Breeding Tricolored Blackbirds in California Counties during the 1930s

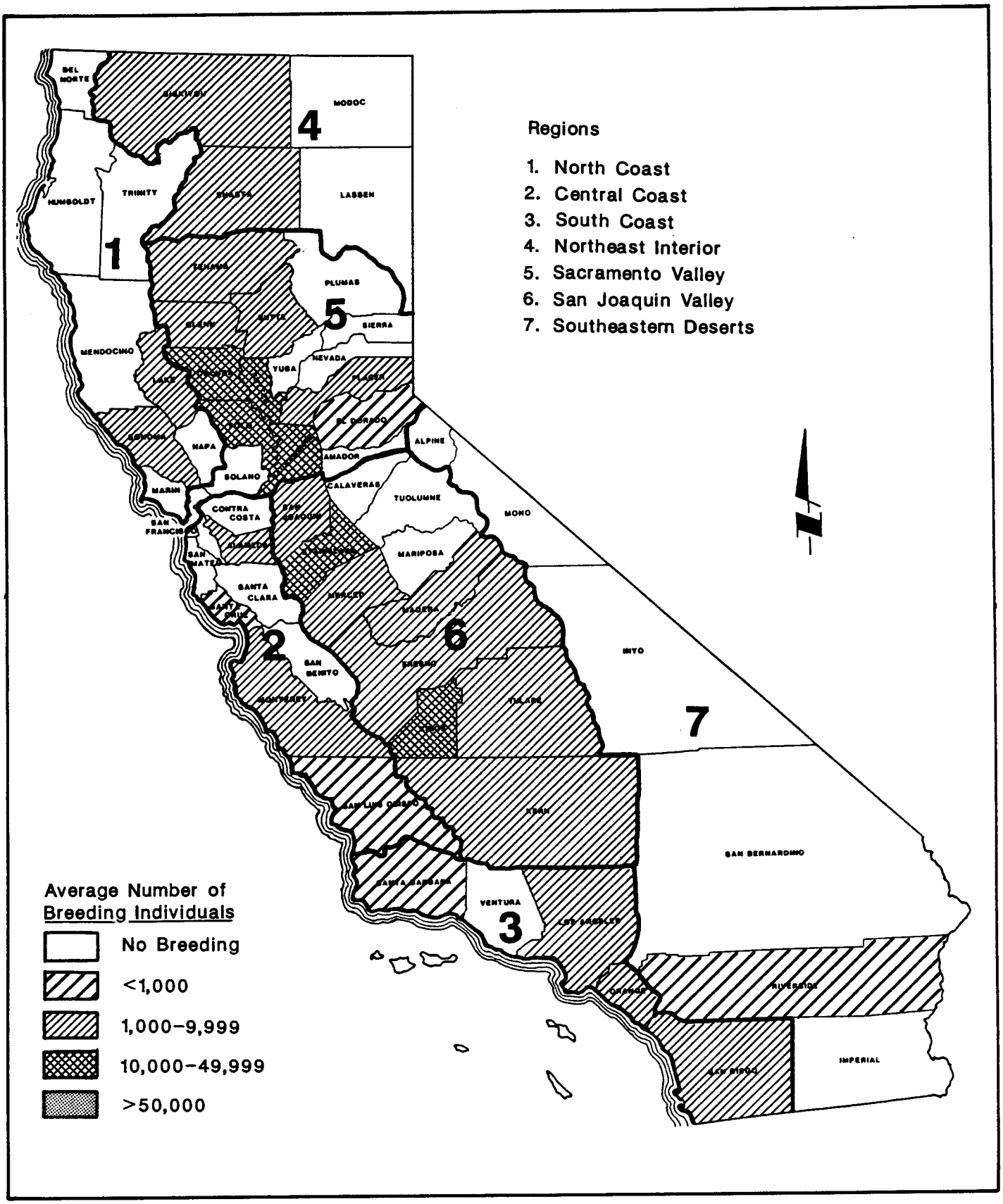


Figure 6. Average Annual Abundance of Breeding Tricolored Blackbirds in California Counties during the 1970s

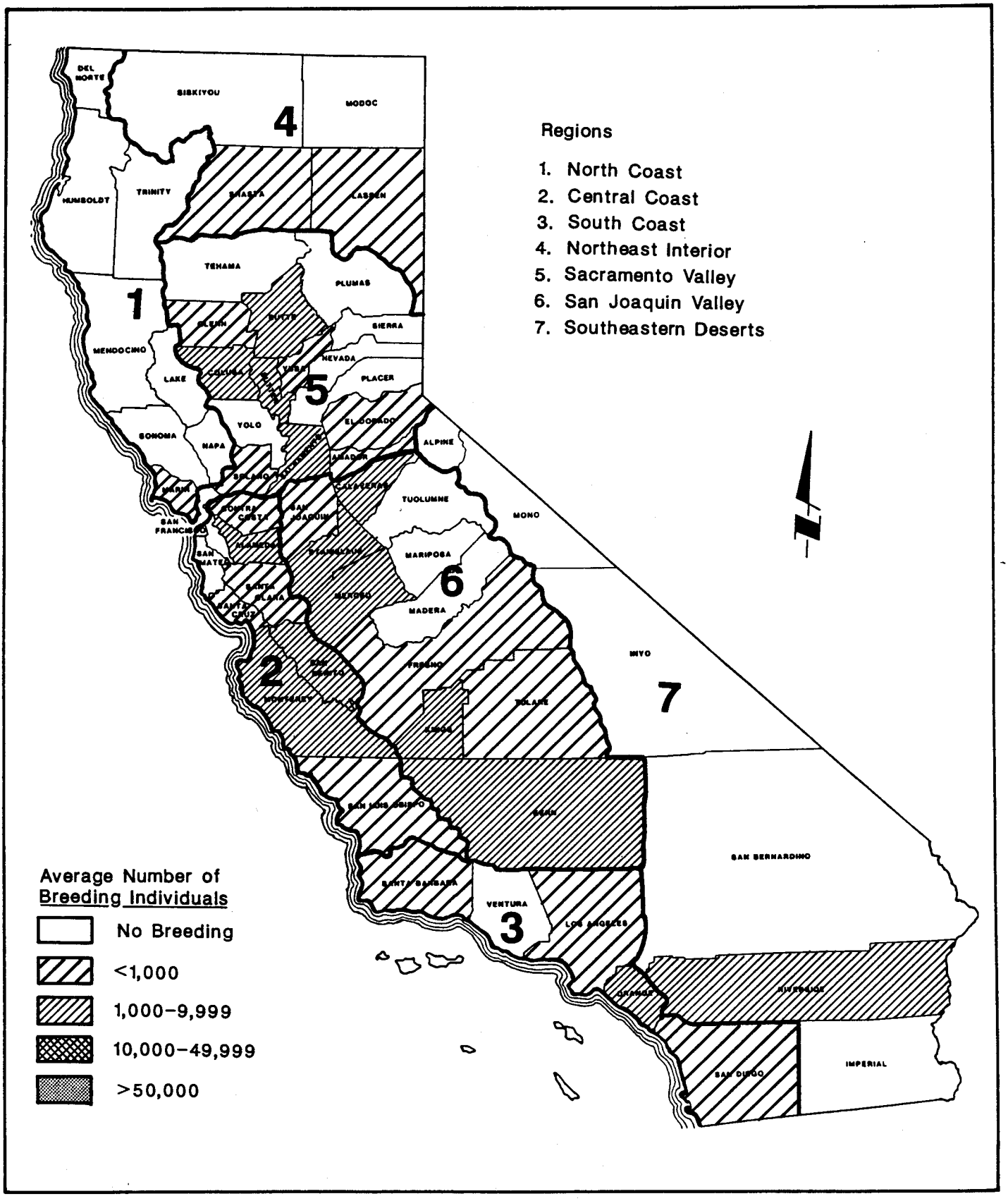
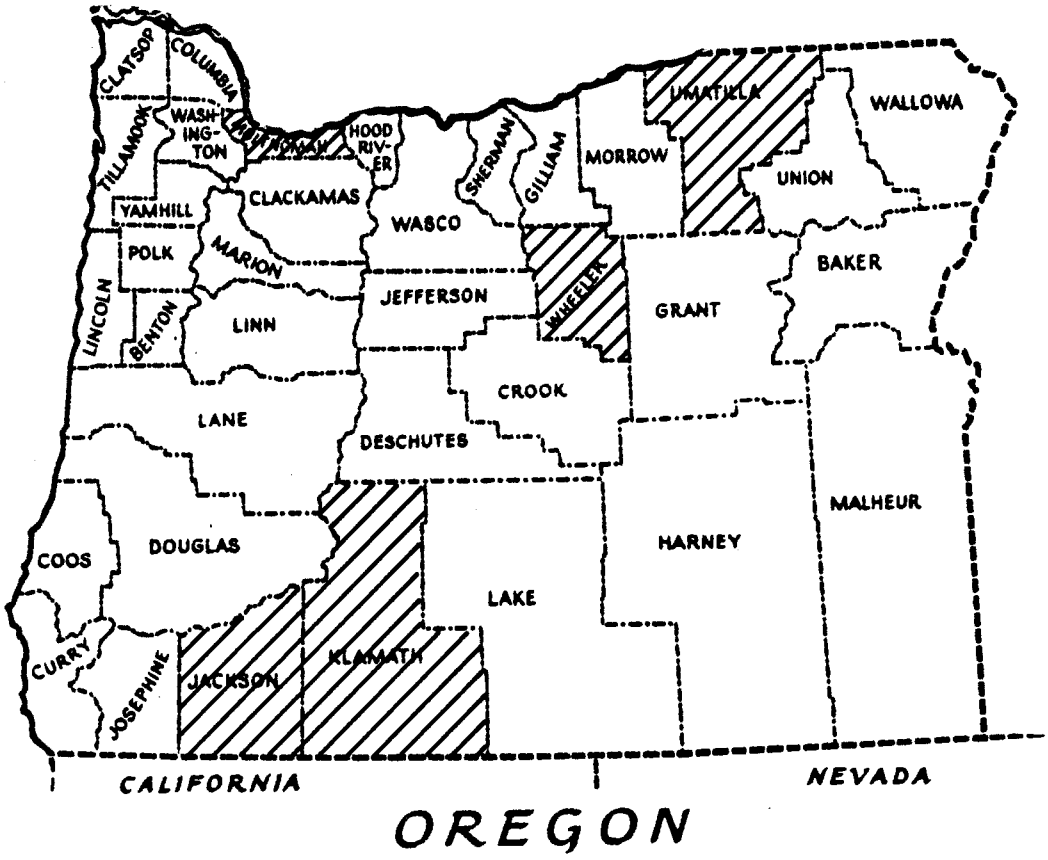


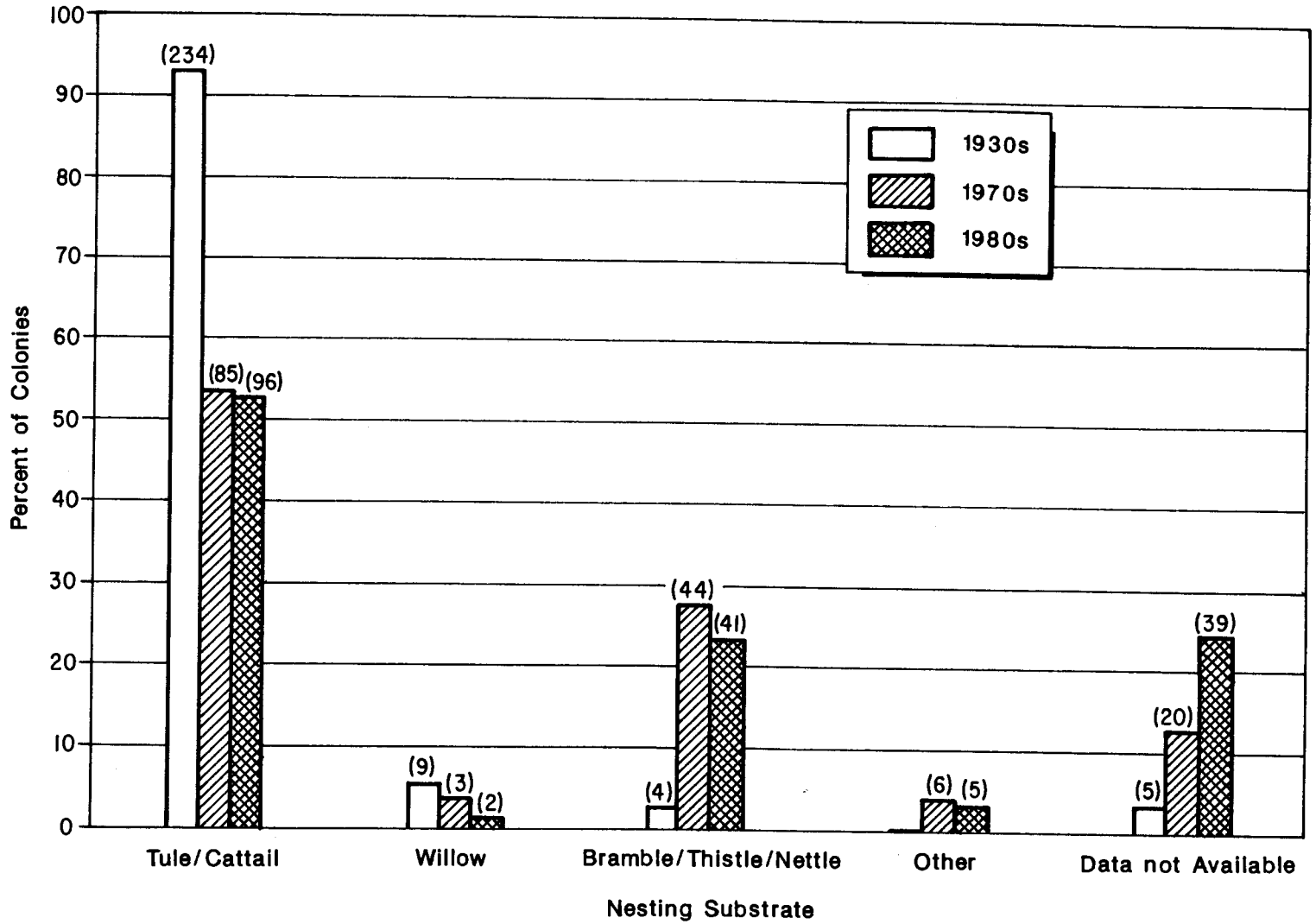
Figure 7. Average Annual Abundance of Breeding Tricolored Blackbirds in California Counties during the 1980s



Average Number of Breeding Individuals

- No Breeding
- <1,000
- 1,000–9,999
- 10,000–49,999
- >50,000

Figure 8. Average Annual Abundance of Breeding Tricolored Blackbirds in Oregon Counties during the 1980s



Note: Numbers in parentheses indicate the total number of colonies reported in each decade.

Figure 9. Percentage of Tricolored Blackbird Colonies in Different Nesting Substrates During the 1930s, 1970s, and 1980s

Appendices

Appendix I–1. Tricolored Blackbird Nesting Observations in Alameda County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1900-1919						
5/20/17	200-300 ind.	Newark (near San Francisco).	Large, dense patch of common nettle.	Large colony with two or more subcolonies found. Many nests had young in them; some still had eggs. Nests lower to the ground had been tilted to one side, possibly by skunks. This same site visited again on May 4, 1918. The patch of nettles where the birds nested last year was deserted; part had been burned. A large colony was found close to last year's site. Nearly all nests contained four eggs; some young were observed, but the nesting season was at its height. Visited site again on May 4, 1919 and observed 200-300 birds. Females were building nests and males were singing. On May 11, colony was nearly deserted; virtually all the nests less than 2 feet above the ground had been tilted over to one side. Skunks and/or opossums were suspected of destroying the nests causing the birds to abandon the colony.	Presumed extirpated	Evermann 1919
1960-1969						
5/9-10/66	10,000 prs.	Stivers Lagoon, central Fremont.	Tule marsh.	Observed several nests with eggs. Most of this marsh was excavated to make Lake Elizabeth, now a "recreational and scenic" asset of Fremont's Central Park. A small marsh still exists; however, no tricolored blackbirds have probably nested there since the lake was built.	Extirpated; some habitat extant	Cogswell pers. comm. Green pers. comm. (Data from Cogswell)

Appendix I-1. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				Observed 70 to 100 adults flying to and from this colony on 6/10/66, apparently carrying food. The colony was not entered or scanned closely on this date. On 7/15/67, no tricolors seen. Colony could have already nested and gone.		
<u>1970-1979</u>						
5/11/71	1,200 ind. 700 nests	Sunol Valley at intersection of Alameda Creek and Highway 680.	Thistle interspersed with tall mustard; no water present.	Size of colony approximately 1.25 acres. Noted nests with 1-day old eggs. Incubation just beginning.	Unknown	DeHaven unpublished field data
5/11/71	5,000 ind. 3,000 nests	Intersection of Highways 680 and 17, approximately 4 miles north of Milpitas.	Thistle interspersed with mustard; no water present.	Size of colony approximately 20 acres; (two colonies 10 acres each on both sides of Highway 17). Observed nine fledglings, two nests with three 4-day old nestlings, one nest with two 1-day old nestlings and two eggs, one nest with three 2-day old nestlings and one egg, and two nests with two 3-day old nestlings.	Unknown	DeHaven unpublished field data
5/11/71	5,000 ind. 3,000 nests	Coyote Hills Regional Park, 1 mile north of Dumbarton Toll Bridge.	Tules; water 1-2 feet deep.	Size of colony approximately 2 acres. Two stages of nesting: nests containing one to four eggs and nests containing one to four nestlings (some with unhatched eggs still present). Also noted several old nests.	Unknown	DeHaven unpublished field data and American Birds file data
1971, 1972, 1974	Up to 600 ind.	Coyote Hills Regional Park, central to south central part.	Tall marsh.	Various observations made from 4/11/71 to 8/13/71. Saw mostly males each time. Nesting not verified.	Unknown	Cogswell pers. comm. & American Birds file data

Appendix I–1. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				During 4/72, observed mostly males (100 ind.). Marsh dry around the edges; no nesting observed. Nesting was confirmed by East Bay Regional Park District personnel during 1971-72. On 4/4/74; 15+ individuals seen, including several singing males. No colony developed in the marsh this year.		
4/4/74-5/11/74	60 prs.	Intersection of Isabel Avenue and Vineard Avenue where Arroyo del Valk crosses Isabel Avenue on northeast corner.	Cattail marsh (freshwater or stream); surrounding area mostly mulefat, small willows, grass, and low shrubs.	Size of colony approximately 0.25 acre. Unknown if colony fledged young; many empty nests observed on 5/11.	Unknown	Edwards pers. comm.
4/27/74	~500	Near Livermore.	Data not available.	Colony observed.	Unknown	Erickson pers. comm.
4/24/76-6/7/76; & 3/28/78-4/30/78;	16+ prs. Hundreds of prs.	Gravel pit area belonging to Kaiser Gravel Company on north side of Stanley Boulevard, 3 miles west of Livermore, and 3 miles east of Pleasanton.	Freshwater cattail marsh; large shallow pond with deep mud bottom.	Size of colony approximately 10 acres. Colony probably fledged young but not known for sure. Colony is located on private property so limited access is available.	Unknown	Edwards pers. comm.
<u>1980-1989</u>						
6/80	125 prs.	Gravel pit area belonging to Kaiser Gravel Company on north side of Stanley Boulevard, 3 miles west of Livermore, and 3 miles east of Pleasanton.	Freshwater cattail marsh; large shallow pond with deep mud bottom.	Size of colony approximately 10 acres. Colony probably fledged young but not known for sure. Colony is located on private property so limited access is available.	Unknown	Edwards pers. comm.

Appendix I-1. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/5/85	120 prs.	City of Fremont, Warm Springs District. Large field north and east of Kato Road near Mission Boulevard and south of Agua Caliente Creek channel. The following three colonies were in close proximity to this colony but had different nesting stages.	Upland field dominated by weeds. Vegetation includes yellow star thistle (8-12 inches), bull thistle (18-34 inches), and wild radish.	Size of colony approximately 1 acre. Many fledglings observed and a few nests still contained young. Most nests in vicinity located in walnut tree. Disturbances included annual mowing for fire prevention, and potential urban development and mammalian predation if trails were created in dense star thistle. Successful nesting indicated by observation of fledged young.	Unknown	Lowe pers. comm.
5/5/85	150 prs.	City of Fremont, Warm Springs District. Northwest corner of Kato Road and Mission Boulevard.	Upland small lot comprised of annual grasses, wild radish (6 ft. tall), mustard (8 ft. tall), and milk thistle (8 ft. tall).	Size of colony less than 1 acre. All nests contained young approximately 1-2 days old and a few contained small young with one egg. Unknown if colony fledged young. Disturbances included annual mowing for fire prevention, frequent human presence, and potential urban development.	Unknown	Lowe pers. comm.
5/5/85	220 prs.	City of Fremont, Warm Springs District. Small lot between Kato Road, Warren Avenue, and Mission Boulevard.	Upland with even mix of mustard, wild radish, and milk thistle with some annual grasses.	Size of colony less than 1 acre. Breeding complete. Approximately 400 fledglings flying around site. Successful nesting indicated by observation of fledged young. Disturbances included annual mowing for fire prevention, frequent human presence, and potential urban development.	Unknown	Lowe pers. comm.
5/5/85	30 prs.	City of Fremont, Warm Springs District, between two sets of railroad tracks bounded by Warren Avenue and Mission Boulevard.	Dense stand of milk thistle and bull thistle.	Very small colony. Fledglings flying around site. Successful nesting indicated by observation of fledged young. Disturbances included possible use of herbicide for weed abatement as vegetation appeared stunted.	Unknown	Lowe pers. comm.

Appendix I–1. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				Four sites listed above (dated 5/5/85) were visited during summer 1986; no tricolored blackbirds were observed.	Unknown	Takakawa per. comm.
5/4-26/85	Several thousand prs.	Gravel pit area located 0.5 mile east of Isabel Avenue and 0.5 mile north of Vineard Avenue. Property of Kwik-Set Company.	Cattail marsh; shallow pond with deep mud bottom.	Size of colony approximately 10 acres. Unknown if colony fledged young (colony is located on private property).	Unknown	Edwards pers. comm.

Appendix I–2. Tricolored Blackbird Nesting Observations in Amador County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
4/21/86	Colony of 200 nests	Near Drytown.	Data not available.		Unknown	American Birds file data

Appendix I-3. Tricolored Blackbird Nesting Observations in Butte County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
1928-1930	Data not available	Vicinity of Oroville, at the eastern edge of the Sacramento Valley near the mouth of the Feather River Canyon (also includes a small area known as Dry Creek).	Cottonwood-sycamore habitat lining the banks of the Feather River, and willow-cottonwood habitat at Dry Creek.	Ten nests with fresh or incubated eggs were found during a 2-year period. No specific information given as to location or number of birds.	Presumed extirpated	Davis 1933
5/10/32	75 nests	Ten miles west of Biggs.	Cattails along canal.		Presumed extirpated	Neff 1937
	500 nests	Ten miles west of Biggs.	Cattails along slough.		Presumed extirpated	Neff 1937
	200 nests	Eight miles west of Biggs.	Cattail marsh.		Presumed extirpated	Neff 1937
	2,500 nests	Four miles north of Biggs.	Cattail marsh.		Presumed extirpated	Neff 1937
5/15/32	5,000 nests	Northeast of Butte City.	Cattail marsh along slough.	Three localities.	Presumed extirpated	Neff 1937
6/17/32	300 nests	Ten miles west of Gridley.	Cattail marsh.		Presumed extirpated	Neff 1937
	2,000 nests	Nine miles west of Gridley.	Cattail marsh.		Presumed extirpated	Neff 1937
	3,000 nests	Four miles west of Biggs.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Three miles north of Biggs.	Cattail marsh.		Presumed extirpated	Neff 1937
	9,000 nests	East of Butte City.	Cattail marsh along slough.	Four localities.	Presumed extirpated	Neff 1937
	4,500 nests	East of Butte City.	Cattail marsh along slough.	Three localities.	Presumed extirpated	Neff 1937
6/24/32	100 nests	Northeast of Butte City.	Cattail marsh along slough.		Presumed extirpated	Neff 1937
	500 nests	Northeast of Butte City.	Cattail marsh along slough.		Presumed extirpated	Neff 1937
5/10/33	2,500 nests	West of Gridley.	Cattail marsh.		Presumed extirpated	Neff 1937

Appendix I–3. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/18/33	50 nests	Near Shippee Station.	Cattails around reservoir.		Presumed extirpated	Neff 1937
	1,200 nests	Six miles west of Biggs.	Cattails along ditch.		Presumed extirpated	Neff 1937
	2,500 nests	Five miles north of Biggs.	Cattails along canal.		Presumed extirpated	Neff 1937
5/20/33	150,000 nest	Northeast of Butte City.	Cattails/tules along slough.	Listed as being in both Butte and Glenn Counties.	Presumed extirpated	Neff 1937
5/24/33	200 nests	Eight miles north of Oroville.	Cattail marsh.		Presumed extirpated	Neff 1937
5/23/34	4,000 nests	Butte Creek.	Cattails along slough.		Presumed extirpated	Neff 1937
	6,000 nests	Southwest of Richvale.	Cattails along canal.		Presumed extirpated	Neff 1937
	20,000 nests	Southwest of Richvale.	Cattails along slough.		Presumed extirpated	Neff 1937
	300 nests	Four miles north of Biggs.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Two miles north of Biggs.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	One mile north of Biggs.	Cattail marsh.		Presumed extirpated	Neff 1937
5/21/35	500 nests	East of Butte City.	Cattails along slough.		Presumed extirpated	Neff 1937
	1,000 nests	Southeast of Richvale.	Cattails along slough.		Presumed extirpated	Neff 1937
	250 nests	East of Riceton Station.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Southwest of Richvale.	Cattail marsh.		Presumed extirpated	Neff 1937
5/27/36	1,000 nests	Near Biggs.	Cattails along canal.		Presumed extirpated	Neff 1937
	3,000 nests	Near Butte City.	Cattails along slough.		Presumed extirpated	Neff 1937
<u>1960-1969</u>						
Spring 1960	35,000 nests	Gridley.	Data not available.	Began nest building on 5/11, egglaying on 5/15, incubating on 5/18, and feeding young on 5/30.	Presumed extirpated	Orians 1961

Appendix I-3. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
10/61	150 nests	Gridley.	Data not available.	Autumnal breeding colony: nest building began on 10/1.	Presumed extirpated	Payne 1969
10/64	100 nests	Gridley.	Data not available.	Autumnal breeding colony: nest building began on 10/1.	Presumed extirpated	Payne 1969
1970-1979						
5/12/71	2,500 ind.	Four miles southwest of Oroville.	Willow trees in nonirrigated, dry, rolling hills.	Size of colony approximately 1 acre. At first visit unsure of nesting activity but on 5/24/71, noted all nests contained full clutches of 6-7 day old incubated eggs.	Unknown	DeHaven unpublished field data
4/2/72, 5/15/72, & 6/10/72	200-500 ind.	Two miles north of Oroville.	Cattail marsh.	Size of colony approximately 0.3 acre. Many nests (about 260) found on 6/10. Successful nesting indicated by observation of about 30 fledglings.	Unknown	Cornell University, Laboratory of Ornithology (data from Nielsen)
6/4/74	7,000-8000 ind.	Two miles south of Afton.	Tules.	Size of colony approximately 0.25 acre. Incubation stage of nesting; some eggs may have already hatched by observation of adults flying to and from nests.	Unknown	DeHaven unpublished field data

Appendix I-3. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
5/28/83	150 prs.	Dump on Humboldt Road located on the outskirts of Chico.	Dense bed of large purple thistle at dump site, adjacent to rolling, rocky foothill grasslands.	Thistle bed not more than 1.25 acres. Tricolored blackbirds were seen foraging in flocks in the surrounding dry, grassy hill-sides (thistle bed was still green). Possible breeding suggested by observation of adults carrying food to thistle bed (nests with young inferred but not seen by observer). Unknown if colony fledged young. No apparent disturbances to colony observed.	Possibly extirpated; habitat extant	Manolis pers. comm.
5/25/85	5,000 prs.	Along Seven-Mile Lane (Chico-Butte City Highway) north of Nelson West Road.	Cattails and tules (mixed, diverse marshland).	Size of colony estimated to be several acres. Possible nesting indicated by observation of birds carrying nest material to site. Unknown if colony fledged young.	Unknown	Manolis pers. comm.
4/29/86	200+ ind.	Rancho Llano Seco, left bank Sacramento River, at Rivermile 180.5. (Llano Seco T20N R12 S17 SW/SE)	New growth riparian habitat dominated by elderberry and poison oak.	Site was logged in early 1970s and burned in 1984. Two hundred adults nesting. Threat of conversion to agricultural use.	Unknown	Snowden pers. comm.

Appendix I–4. Tricolored Blackbird Nesting Observations in Calaveras County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1960-1969						
1963	4,000 ind.	Rock Creek downstream of Rock Creek Road bridge, 2 miles southeast of Milton.	Cattails.	See comments for 5/10/88 observation.	See comments for 5/10/88 observation	Natural Diversity Data Base (data from Gifford)
1980-1989						
4/23/87	400+ ind.	Near Milton Road.	Lush grasslands.	Two flocks observed north of Milton and two flocks seen south of Milton, apparently nesting.	Unknown	Campbell pers. comm. (data from American Birds file)
4/23/87	500+ ind.	Highway 26, just east of San Joaquin County line.	Grassy valley, no substrate given.	Breeding site. Females observed with nest material.	Unknown	American Birds file data
5/9/87	2,000 ind.	Rock Creek Road, 2 miles south-east of Milton.	Dense patches of roses with some blackberry bushes in a little valley in low foothills; a pasture area with small creek.	Heard calls of many young from within the shrub thickets. Originally estimated the total number of birds to be 12,000 ind. in late April (by Elsie Richey).	Presumed extant	Cogswell pers. comm.
5/10/88	300-400 ind.	North bank of Rock Creek down-stream of rock Creek Road bridge, 2 miles southeast of Milton. (Jenny Lind T2N R10E S24)	Rose and blackberry thicket.	Approximately 4,000 observed nesting in 1963. Only 300-400 found nesting in rose and blackberry thicket in 1988. Significant habitat destruction between 1987 and 1988 due to grazing. Nests found in 0.25 section along north bank.	Presumed extant	Natural Diversity Data Base (data from Gifford field survey 1988)

Appendix I–4. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/27/89 & 6/20/89	150-200 ind.	Two miles north-northwest of Altaville; 1 mile west of Dogtown Road.	Irrigated, grazed pasture with blackberry patches and several small ponds.	Total field size approximately 10 acres. Birds seen flying, perching, and occasionally singing from blackberries and oak trees surrounding pasture. One bird seen carrying food to blackberries at edge of pond. Unknown if nests present or if colony fledged young, but continuous presence in this period suggests possible nesting. Landowner wants to control blackberries; bushes most likely to support nesting activity can be saved.	Extant	Airola pers. comm.

Appendix I–5. Tricolored Blackbird Nesting Observations in Colusa County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/12/32	5,000 nests	Southwest of Princeton.	Cattails along slough.		Presumed extirpated.	Neff 1937
5/12/32	75 nests	Five miles northeast of Maxwell.	Cattails along slough.		Presumed extirpated.	Neff 1937
	1,000 nests	Five miles northeast of Maxwell.	Cattails along slough.		Presumed extirpated.	Neff 1937
	20,000 nests	Four miles northeast of Williams.	Cattail marsh.		Presumed extirpated.	Neff 1937
6/13/32	250 nests	Five miles southwest of Grimes.	Cattails along slough.		Presumed extirpated.	Neff 1937
	750 nests	Nine miles southwest of Colusa.	Cattail marsh.		Presumed extirpated.	Neff 1937
6/20/32	1,000 nests	Three miles southwest of Maxwell.	Cattail marsh.		Presumed extirpated.	Neff 1937
	200 nests	Two miles southwest of Maxwell.	Cattails along canal.		Presumed extirpated.	Neff 1937
	500 nests	One mile west of Maxwell.	Cattail marsh.		Presumed extirpated.	Neff 1937
6/23/32	2,500 nests	Four miles east of Delevan.	Cattails along canal.		Presumed extirpated.	Neff 1937
6/24/32	400 nests	Fifteen miles west of Biggs.	Cattail marsh.		Presumed extirpated.	Neff 1937
4/28/33	10,000 nests	Colusa Outing Club.	Cattail marsh.		Presumed extirpated.	Neff 1937
5/4/33	4,000 nests	Four miles south of Maxwell.	Cattails along canal.		Presumed extirpated.	Neff 1937
5/9/33	2,000 nests	One mile southwest of Cortena.	Cattails along canal.		Presumed extirpated.	Neff 1937
6/6/34	15,000 nests	Five miles west of Colusa.	Cattail marsh.		Presumed extirpated.	Neff 1937
	7,500 nests	Five miles west of Colusa.	Cattail marsh.		Presumed extirpated.	Neff 1937
	7,500 nests	Three miles southeast of Maxwell.	Cattail marsh.		Presumed extirpated.	Neff 1937
	7,500 nests	Seven miles northeast of Maxwell.	Cattails along slough.		Presumed extirpated.	Neff 1937

Appendix I-5. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/28/36	3,000 nests	Near Williams.	Cattail marsh.		Presumed extirpated.	Neff 1937
	2,000 nests	Near Williams.	Cattail marsh.		Presumed extirpated.	Neff 1937
1950-1959						
Spring 1959	1,500 nests	East Park Reservoir.	Cattail marsh.	Began nest building on 4/21, egglaying on 4/25, incubating on 4/28, and feeding young on 5/10. Mass desertion of the colony began on 5/2, and by 5/15 only eight females were feeding young. Abandonment of the colony may be attributed to the inadequacy of food; the spring of 1959 was unusually dry.	Presumed extirpated	Orians 1961
Spring 1959	80,000 nests	Capitol Outing Club.	Cattails.	Colony stretches over 1 mile with various stages of nesting occurring. In the northeastern portion, nest building began on 5/8, egglaying on 5/11, incubating on 5/14, and feeding young on 5/26. On 6/11, young observed flying. On 5/26 in the southwestern portion, nest building is just beginning. By 6/20 most young are being fed.	Presumed extirpated	Orians 1961
10/16/59	19,500 prs.	Five miles west of Colusa, on a large duck-hunting club.	Cattails.	Autumnal breeding colony; nest building began 10/3, egg laying began on 10/7, and nestlings hatching on 10/23. Many of the nests were abandoned after eggs were laid and nestling survival was poor, probably due to lack of food availablity. Only about 200-300 young fledged.	Unknown	Orians 1960

Appendix I-5. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1960-1969						
Spring 1960	50 nests	East Park Reservoir (site A).	Cattail marsh.	Began nest building on 4/21, egglaying on 4/25, incubating on 4/28, and feeding young on 5/7.	Unknown	Orians 1961
Spring 1960	600 nests	East Park Reservoir (site B).	Cattail marsh.	Began nest building on 5/17, egglaying on 5/21, and incubating on 5/24. This colony was destroyed.	Unknown	Orians 1961
Spring 1960	100,000 nests	Capitol Outing Club.	Data not available.	Began nest building on 5/17, egglaying on 5/21, incubating on 5/24, and feeding young on 6/5.	Unknown	Orians 1961
10/61	4,000 nests	Colusa.	Data not available.	Autumnal breeding colony; nest building began 10/19.	Unknown	Payne 1969
4/25/62-5/3/62	250 ind.	East Park.	Data not available.	Number of nests: 150 Number of nests fledged: --	Unknown	Payne 1969
6/8-12/63	400 ind.	East Park.	Data not available.	Number of nests: 200 Number of nests fledged: --	Unknown	Payne 1969
4/15/64-5/10/64	20,000 ind.	East Park.	Data not available.	Number of nests: 7,500 Number of nests fledged: 5,000	Unknown	Payne 1969
4/15-20/65	200 ind.	Stonyford.	Data not available.	Number of nests: 40 Number of nests fledged: --	Unknown	Payne 1969

Appendix I-5. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/20/65-6/20/65	400 ind.	East Park.	Data not available.	Number of nests: 100 Number of nests fledged: 80	Unknown	Payne 1969
<u>1970-1979</u>						
1971	Data not available	Two and one-half miles west of Browning Road intersection with county line.	Cattails.	Colony nesting in cattails.	Unknown	Natural Diversity Data Base (data from DeHaven)
1971	Data not available	South and west sides of East Park Reservoir, southeast of Stonyford.	Cattail/willow.	Colony nesting in cattail/willow habitat.	Unknown	Natural Diversity Data Base (data from DeHaven)
5/24/71	25,000 ind.	Four and one-half miles west of Colusa.	Cattail marsh.	Size of colony approximately 10 acres. Appears that nesting activity has just begun but possibility of incubating.	Unknown	DeHaven unpublished field data
5/26/71	Less than 1,000 ind.	East Park Reservoir, 2 miles north of Ladoga on northwest corner of resevoir.	Willow trees; water 6-8 feet deep.	Size of colony approximately 1 acre. Noted nest building 50-75 percent complete.	Unknown	DeHaven unpublished field data
4/21/72	1,000 ind.	Sutter Buttes, 5 miles east of Colusa.	Cattail marsh.	Size of colony approximately 1-2 acres. No apparent nesting activity yet.	Unknown	DeHaven unpublished field data
6/8/72	15,000-18,000 ind.	County Line	Cattail marsh.	Size of colony 8-9 acres. Young have fledged but are still in marsh.	Unknown	DeHaven unpublished field data
6/4/74	2,000 ind.	Three miles northwest of Sutter.	Blackberries.	Size of colony approximately 0.1 acre. Possible nesting colony but did not check.	Unknown	DeHaven unpublished field data

Appendix I–5. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/12/74	2,500 ind.	End of Putnam Road.	Blackberries, willows, and thistles.	Size of colony approximately 1 acre. Incubation stage of nesting.	Unknown	DeHaven unpublished field data
6/6/75	15,000 ind.	East side of Highway 99, 1 mile north of Maxwell.	Tules and willows; water 1 foot deep.	Size of colony approximately 1.5 acres. Probable nesting area; tricoloreds have nested in this location before.	Unknown	DeHaven unpublished field data
1980-1989						
5/19/81	239 ind.	Richmond Gun Club, Highway 20 and Hausted Road.	Cattails along canals and culverts.	Nests abandoned when cattails started dying, possibly from herbicide spraying.	Unknown	Hosea 1986
5/19/81	1,330 ind.	Highway 20 and Lone Star Road, approximately 3 miles southwest of Colusa.	Cattails in ponds and canals/ culverts.	Nests abandoned when cattails started dying, possibly from herbicide spraying.	Unknown	Hosea 1986
6/17/82	1,800 ind.	Fourmile Road, approximately 5 miles east southeast of Princeton and 3 miles north of Delevan National Wildlife Refuge. (Princeton T18N R2W S29)	Rice field.	Colony of approximately 1,800 nesting in a rice field.	Unknown	Hosea 1986
6/17/82	900 ind.	Putnam Road, 2.5 miles northwest of Butte-Colusa-Sutter Counties junction. (Sanborn Slough T17N R1W S15)	Rice field.	Colony of approximately 900 nesting in a fice field.	Unknown	Hosea 1986

Appendix I–5. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/12/87-6/25/87	2,000 ind.	Tract 21 of Colusa National Wildlife Refuge. (Colusa T15N R2W S26 NW)	Cattail marsh.	Size of colony approximately 25 acres. Site found abandoned. Colony failed while feeding young in nests, possibly due to predation by northern harriers and black-crowned night herons which nested in large numbers nearby. No disturbances or threats to colony other than predators. This is a different site than used in 1988-1989 (see Berendzen notes).	Extant	Beedy and Hayworth (in press) and Mauser pers. comm.
7/88 & 8/88	2,000 ind.	Colusa National Wildlife Refuge, Tracts 21 and 22. Also observed several flocks in adjacent private rice fields.	Cattail marsh.	No breeding observed--just nightly roosting. Birds arrived too late for typical nesting. Unknown if colony fledged young.	Habitat extant	Berendzen pers. comm.
5/26/89-6/30/89	1,000 prs.	Colusa National Wildlife Refuge, Tracts 21 & 22, west of Ohm Road. (Colusa T15N R2W S26 NE)	Bulrush/cattail deepwater marsh.	Size of colony approximately 80 acres (four separate subcolonies reported with 200-300 pairs of birds per site). Nest building observed on 5/26 in subcolonies 1 and 2. Successful nesting indicated by observation of fledged young in subcolonies 1 and 2 approximately 6/23, and colony 3 around 7/6. Unknown if subcolony 4 fledged young.	Extant	Berendzen pers. comm.

Appendix I–6. Tricolored Blackbird Nesting Observations in Contra Costa County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
4/19/80	25 prs.	East Martinez, Mt. View Sanitation District sewage ponds.	Tules.	Colony abandoned because of minor tule removal.	Unknown	American Birds file data
5/9/80	250 ind.	Southwest of Byron.	Dense bull thistle near small pond in grassland.	Nesting observed.	Unknown	American Birds file data
Most Years	Data not available	Marsh Creek Reservoir. (Nearest road is Marsh Creek Road and nearest town is Brentwood).	Tules and cattails.	Possible nesting and fledging in some years. No apparent disturbances observed or known.	Extant	Richmond pers. comm.
3/30/89 to 5/11/89	1,000 ind.	Marsh Creek Reservoir.	Cattails around reservoir. Annual grasslands surround area.	Site visited from 3/30 to 5/11 on various occasions. Nesting presumed but not verified.	Extant	Myers pers. comm.
?	Data not available	Farm pond between Brentwood and Vasco Road (Los Vaqueros area).	Pond.	Tricolored blackbirds observed by others around 1980. Birds observed during 1988 field studies for Los Vaqueros Project. Unknown if colony has ever fledged young.	Probably extant; habitat definitely extant	Richmond pers. comm.
1990						
4/2/90	100-200 prs.	Unimin Quarry, approximately 2.5 miles west of Byron, off Camino Diablo Road.	Cattail marsh along northwest edge of 1-acre pond within quarry property. Pond has been on property for at least 10 years.	Size of colony approximately 0.25 acre. Colony is on private property with no further access allowed, so unknown if colony fledged young.	Extant	Schmoldt pers. comm.
5/7/90	125 prs.	Approximately 1 mile east of Alamo Creek and Dougherty Road, adjacent to Parks Military Reserve.	Freshwater stock ponds (2); both with dense cattails in portions of pond. Westernmost pond has approximately 0.25 mile of willow riparian upstream.	Size of colony approximately 0.5 acre. Approximately 100 pairs at westernmost pond and 25 pairs in upper pond. Observed young being fed. Area is planned for development.	Extant	Schmoldt pers. comm.

Appendix I–7. Tricolored Blackbird Nesting Observations in El Dorado County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
6/12/96	Data not available	The shores of Lake Tahoe.	Data not available.	Nesting colony.	Unknown	Barlow 1900 (data from R. H. Beck)
1970-1979						
5/31/71	400 prs.	Salmon Falls Road, 3.9 miles south of Pilot Hill. (T11N R9E NE 1/4 NW 1/4 S19)	Blackberries.	Nesting colony.	Unknown	Wilburn pers. comm.
1980-1989						
5/31/87	500 ind.	Crazy Horse Campground, 150 yards south of Highway 50, between Bass Lake exit and Cameron Park exit. (Clarksville T9N R9E S8 NE/NE)	Cattails on small pond.	Colony of approximately 500 adults; adults carrying insects to young in nest.	Presumed extant	Natural Diversity Data Base (data from Hosea)

Appendix I-8. Tricolored Blackbird Nesting Observations in Fresno County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1900-1919						
4/30/07	Hundreds of ind.	Thirty miles southwest of Fresno.	Patch of nettles growing in a low, damp sink at the end of a large abandoned slough. A dense fringe of willows was located on two sides of the nettle patch.	Two colonies (about 200 yards apart) observed on this date. Both seemed to be less than 0.5 acre in size with about the same number of birds. Many nests were found which contained three to five eggs. Nests containing young birds were found in the center of the nettle patch.	Presumed extirpated	Tyler 1907
6/30/07	Hundreds of ind.	Near Letcher.	Large clump of tules growing in about 4 feet of water in a pond.	Out of 200 nests found, there were some young birds, but most nests contained three to four highly incubated eggs.	Presumed extirpated	Tyler 1907
1920-1949						
6/6/36	100 nests	Near Firebaugh.	Cattails along canal.	Apparently this colony was a remnant of a much larger colony. The major part of which had already left the nests.	Presumed extirpated	Neff 1937
1960-1969						
4/10-25/62	1,000 ind.	Firebaugh.	Data not available.	Number of nests: 400 Number of nests fledged: 20	Unknown	Payne 1969
10/63	100 nests	Firebaugh.	Data not available.	Autumnal breeding colony; nest building began 10/2.	Unknown	Payne 1969
10/63	1 nest	Firebaugh.	Data not available.	Autumnal breeding colony; nest building began 10/25.	Unknown	Payne 1969
5/16-21/64	10,000 ind.	Firebaugh.	Data not available.	Number of nests: 600 Number of nests fledged: --	Unknown	Payne 1969

Appendix I-8. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1970-1979						
5/28/74	2,300 ind.	Three miles northwest of Clovis.	Blackberry thickets.	Many nests found during visit, both active and inactive. Successful nesting indicated by observation of 200-300 fledged young.	Unknown	Cornell University, Laboratory of Ornithology (data from Hansen)
4/9/75	121 ind.	California State University, Fresno campus.	Data not available.	Flock took over redwing colony for first time; many successful nests noted.	Unknown	American Birds file data
Numerous; Intensive 6/75 & 7/75	3,000 ind.	Northwest corner of Bullard and Cedar Avenues in Fresno (flood control basin). (Fresno North T13S R20E S2 SE)	Cattail marsh.	Size of colony approximately 3-4 acres. Several observations indicated successful nesting. Colony foraged, and was probably maintained (dependent), on California State University, Fresno agricultural (grain) fields to the east. Colony abandoned because habitat eliminated for basin maintenance.	Definitely extirpated; habitat eliminated	Valentine pers. comm.
1978	Several hundred	Little Panoche Detention Reservoir.	Cattail along shoreline.	Unknown if colony successfully nested here.	Unknown	Beam pers. comm.

Appendix I-8. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
1981-1988	1,000 ind.	Northeast of Friant-Kern Canal and Tollhouse Road (Highway 168). (Round Mountain T12S R22E S20 SE)	Cattail/tule marsh, possibly created/enhanced by barrier effect of Friant-Kern Canal on upslope drainage.	Size of colony less than 1 acre. Unknown if colony fledged young. Disturbance to colony may become apparent with grazing and pasture management which may alter amount of water applied or may cause owner to eliminate cattails for more productive livestock use. In 1988, no tricolored blackbirds observed.	Presumed extant; habitat extant	Valentine pers. comm.
5/86	Data not available	Little Panoche Reservoir. (Laguna Seca Ranch T13S R11E S19 SE/SE)	Saltbush (Atriplex sp.).	Nesting colony.	Unknown	Natural Diversity Data Base (data from California Department of Fish and Game R-4 Monthly Report)
5/3/89	2,000 ind.	Lemon grove on north side of Friant Kern canal. Approximately 1 mile north of Tollhouse Road (Highway 168) and approximately 1.5 miles northeast of Tollhouse/ Shepard/Thompson intersection. (Academy T12S 22E S?)	Active lemon orchard.	Tricoloreds have been nesting in this orchard and nearby orchards for 8-10 years according to ranch supervisor. Disturbances include tree trimming operations and possible spraying during breeding season.	Extant	Natural Diversity Data Base (data from Miller)
5/8/87 & 5/18/87	150 ind.	Little Panoche Reservoir and adjacent grasslands. (Laguna Seca Ranch T13S R11E)	Cattails.	Successful nesting indicated by observation of fledged young.	Presumed extant; habitat extant	Myers pers. comm.; American Birds file data (data from Erickson)

Appendix I-8. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
<u>1990</u>						
5/14/90	1,000-1,500 ind.	North side of Shaw Avenue, 0.6 mile west of Academy Avenue. (Round Mountain T13S 22E S 1/2 of SW 1/4 S10)	Cattail/tule marsh.	Colony found nesting in marsh. Observed foraging in an irrigated pasture to the west. Possible threats/disturbances include urban uses to the south (removal of annual grassland foraging area) and change in farm economics and water availability that could in turn cause a change away from irrigated pasture which appears to support nesting habitat.	Extant	Valentine pers. comm.

Appendix I–9. Tricolored Blackbird Nesting Observations in Glenn County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/10/32	15,000 nests	Eight miles southeast of Willows.	Cattail marsh.		Presumed extirpated	Neff 1937
	5,000 nests	Five miles east of Butte City.	Cattails/tules along slough.		Presumed extirpated	Neff 1937
5/11/32	3,000 nests	Six miles southeast of Willows.	Willows.		Presumed extirpated	Neff 1937
	5,000 nests	Two miles west of Sidds Landing.	Cattails/tules along ditch.		Presumed extirpated	Neff 1937
	3,000 nests	Three miles S. of Fairview School.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Two miles E. of Fairview School.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
5/12/32	15,000 nests	Four miles east of Norman.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
5/21/32	8,000 nests	One mile S. of Fairview School.	Cattails/tules/sedges along slough.		Presumed extirpated	Neff 1937
6/21/32	1,000 nests	Three miles SE of Fairview School.	Cattail marsh.		Presumed extirpated	Neff 1937
	2,500 nests	Three miles E. of Fairview School.	Cattail marsh.		Presumed extirpated	Neff 1937
6/24/32	5,000 nests	Seven miles NE of Butte City.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
	5,000 nests	Nine miles NE of Butte City.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
4/21/33	2,500 nests	East of Willows.	Cattails along slough.		Presumed extirpated	Neff 1937
5/3/33	500 nests	East of Willows.	Cattails and willows along slough.		Presumed extirpated	Neff 1937
5/4/33	5,000 nests	Six miles southeast of Willows.	Willows.		Presumed extirpated	Neff 1937
5/10/33	1,500 nests	Two miles west of Glenn.	Cattail marsh.		Presumed extirpated	Neff 1937
	2,000 nests	Five miles southwest of Glenn.	Cattail marsh.		Presumed extirpated	Neff 1937

Appendix I-9. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/25/34	250 nests	Two miles south of Willows.	Cattails along ditch.		Presumed extirpated	Neff 1937
	2,000 nests	Three miles southeast of Willows.	Cattails along canal.		Presumed extirpated	Neff 1937
5/9/34	6,000 nests	Eight miles NE of Butte City.	Cattails along slough.		Presumed extirpated	Neff 1937
	2,500 nests	Eight miles NE of Butte City.	Cattail marsh.		Presumed extirpated	Neff 1937
5/10/34	1,000 nests	Three miles south of Willows.	Cattails along ditch.		Presumed extirpated	Neff 1937
	1,000 nests	One mile west of Norman.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	One mile east of Norman.	Cattails along canal.		Presumed extirpated	Neff 1937
	200,000 nests	Four miles east of Norman.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
	750 nests	Six miles southeast of Willows.	Cattail marsh.		Presumed extirpated	Neff 1937
	500 nests	Six miles southeast of Willows.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Six miles southeast of Willows.	Cattail marsh.		Presumed extirpated	Neff 1937
5/15/34	2,500 nests	Three miles west of Glenn.	Cattail marsh.		Presumed extirpated	Neff 1937
5/16/34	500 nests	Two miles east of Norman.	Cattails along canal.		Presumed extirpated	Neff 1937
	30,000 nests	Four miles southeast of Willows.	Cattails along slough.		Presumed extirpated	Neff 1937
	750 nests	Eight miles northeast of Norman.	Cattails along canal.		Presumed extirpated	Neff 1937
5/21/34	200 nests	Four miles east of Willows.	Cattails and willows along slough.		Presumed extirpated	Neff 1937
	1,500 nests	Seven miles southeast of Willows.	Cattails along slough.		Presumed extirpated	Neff 1937
5/22/34	3,000 nests	Four miles northwest of Princeton.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
	400 nests	Two miles northwest of Princeton.	Cattails/tules along slough.		Presumed extirpated	Neff 1937
	7,500 nests	Two miles northwest of Princeton.	Cattails/tules along slough.		Presumed extirpated	Neff 1937
5/30/34	750 nests	Three miles northeast of Norman.	Cattails along creek.		Presumed extirpated	Neff 1937

Appendix I–9. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/1/34	600 nests	Three miles northwest of Princeton.	Cattails along canal.		Presumed extirpated	Neff 1937
	1,250 nests	Eight miles northeast of Norman.	Cattails along canal.		Presumed extirpated	Neff 1937
6/2/34	1,000 nests	Three miles south of Willows.	Cattail marsh.		Presumed extirpated	Neff 1937
6/4/34	10,000 nests	Three miles southwest of Willows.	Cattail marsh.		Presumed extirpated	Neff 1937
6/5/34	5,000 nests	Four miles southwest of Willows.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Two miles east of Norman.	Cattails along creek.		Presumed extirpated	Neff 1937
5/22/35	1,000 nests	East of Willows.	Cattails along slough.		Presumed extirpated	Neff 1937
	2,500 nests	Southwest of Glenn.	Cattail marsh.		Presumed extirpated	Neff 1937
	400 nests	West of Glenn.	Cattail marsh.		Presumed extirpated	Neff 1937
	200 nests	West of Glenn.	Cattail marsh.		Presumed extirpated	Neff 1937
5/27/36	1,000 nests	Near Butte City.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Near Artois.	Willows along creek.		Presumed extirpated	Neff 1937
5/28/36	2,500 nests	Near Willows.	Cattail marsh.		Presumed extirpated	Neff 1937
<u>1960-1969</u>						
4/7/63-5/25/63	1,200+ ind.	Elk Creek.	Data not available.	Number of nests: 560 Number of nests fledged: 300	Unknown	Payne 1969
10/63	20 nests	Elk Creek.	Data not available.	Autumnal breeding colony; nest building began on 10/3.	Unknown	Payne 1969
4/18/64-6/9/64	800 ind.	Elk Creek.	Data not available.	Number of nests: 590 Number of nests fledged: 100	Unknown	Payne 1969

Appendix I–9. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/20-25/65	200 ind.	Four-pen.	Data not available.	Number of nests: 20 Number of nests fledged: 0	Unknown	Payne 1969
5/7-11/65	600 ind.	Four-pen.	Data not available.	Number of nests: 100 Number of nests fledged: 0	Unknown	Payne 1969
5-24-29/65	600 ind.	Four-pen.	Data not available.	Number of nests: 70 Number of nests fledged: 0	Unknown	Payne 1969
4/20-25/65	100 ind.	Corral Marsh.	Data not available.	Number of nests: 20 Number of nests fledged: 0	Unknown	Payne 1969
<u>1970-1979</u>						
5/12/71	2,500 ind.	Two miles south of Afton.	Long, narrow cattail marsh in the middle of an oat field; water 2-3 feet deep.	Size of colony approximately 1 acre. Noted that half of the colony has finished nest building.	Unknown	DeHaven unpublished field data
5/24/71	3,000 ind.	Three miles southwest of Orland.	Cattail marsh.	Size of colony approximately 2 acres. Birds just arrived so no nesting activity evident.	Unknown	DeHaven unpublished field data
5/30/72	1,000 ind. 750 nests	East of 5/12/71 colony, about 0.75 mile.	Cattails; water 1-4 feet deep in ditch.	Size of colony approximately 0.2 acre. Incubation stage of nesting.	Unknown	DeHaven unpublished field data
5/15/75	20,000 ind.	Afton.	Tule/bulrush; water 2 feet deep.	Size of colony approximately 1.25 acre. Some nest building activity beginning. On 6/6, 6/9, and 6/12, nestling taken for data.	Unknown	DeHaven unpublished field data

Appendix I–9. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
5/30/85	Data not available	Sacramento National Wildlife Refuge.	Flooded cattail/hardstem bulrush.	Nests (73,000) found. No data as to number of fledgling, if any.	Unknown	American Birds file data
6/1-28/89	Several hundred prs.	Sacramento National Wildlife Refuge (P7A.3), approximately 1 mile south of Norman Road.	Flooded cattail/hardstem bulrush.	Size of colony approximately 50 acres. Unknown if colony fledged young. No visible threats or disturbances to colony.	Extant.	Mensik pers. comm.

Appendix I–10. Tricolored Blackbird Nesting Observations in Kern County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1900-1919						
5/20/07-6/16/07	Data not available	Buena Vista Lake.	Data not available.	Breeding colony found.	Extirpated	C. B. Linton (cited in Neff 1937)
6/7/12	"Hordes"	Immediate vicinity of Buena Vista Lake.	Data not available.	Large colony found.	Extirpated	Lamb and Howell 1913
1920-1949						
4/2/21	20 prs.	Walker Basin.	Old dead tule patch.	Nests found containing one to four incubated eggs. One female seen carrying food, probably to small young.	Presumed extirpated	Dickey and Van Rossem 1921
4/30/35	1,500 nests	Near Wasco.	Cattails around reservoir.		Presumed extirpated	Neff 1937
5/6/36	500 nests	Near Tupman.	Cattails/tules along slough.		Presumed extirpated	Neff 1937
	50 nests	Connors Station.	Cattails along slough.		Presumed extirpated	Neff 1937
1970-1979						
5/4/71	2,000 ind. 1,200 nests	Intersection of Highway 43 and Stockdale Highway, approximately 12 miles east of Bakersfield.	Tules. Water dried up.	Size of colony approximately 1.25 acres. Observed young 1-2 days old and also nests with eggs still in them. Noted that a man shot three adults.	Unknown	DeHaven unpublished field data
4/73	1,000 ind.	Approximately 2.5-3 miles due west of Kern National Wildlife Refuge.	Data not available.		Unknown	Hawes pers. comm. (letter to Crase)

Appendix I-10. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
6/2/81	1,200 ind.	Kern Valley Wildlife Area.	Data not available.	Young present.	Unknown	Hosea 1982
3/26/83	100 prs.	Southwest corner of main park pond (California City Central Park).	Cattails over water.	Size of colony less than 1 acre. Unknown if colony fledged young. Colony was taken over by yellow-headed blackbirds when cattails were removed during 1983-1985. During 1984 site visit, only 10 males observed during cattail removal project.	Possibly extirpated; partial habitat extant	Chichester pers. comm.
1983-1986	1,000s of prs.	Kern National Wildlife Refuge, Unit 1, 20 miles west of Delano, CA.	Cattail marsh.	Size of colony approximately 10 acres. Colony presumed successful in fledging young. Disturbances included cattail burning by refuge staff and unreliable water supply.	Presumed extant; habitat extant	Chichester pers. comm.
8/86	2,000 ind.	South Fork Kern River. Vicinity of Prince Pond at east end of Lake Isabella. (Weldon T26S R34E S16 /NE)	Cattail marsh.	Breeding colony.	Unknown	Natural Diversity Data Base (data from Laymon & Halterman 1986)
Spring 1988-1989	60 prs.	South of Laval Road (200 yards), approximately 1 mile east of Tejon Agriculture Partners' headquarters and almond huller.	Ephemeral drainage consisting of mulefat, cottonwood, and a black-berry thicket.	Size of colony less than 1 acre. Successful nesting indicated by observation of fledged young. Possible disturbance may be due to agricultural spraying.	Definitely extant; habitat extant	Chichester pers. comm.

Appendix I–10. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/89	350 prs.	Northwest corner of Interstate 5 and Twisselman Road intersection.	Holding pond surrounded by Tamarisk and willow trees.	Size of colony approximately 15-20 acres. Saw many nests and newly fledged young.	Extant	Gerstenberg pers. comm.
<u>1990</u>						
6/2/90	700-1,000 prs.	Hidden Lake Condominium complex adjacent to Highway 178 between mouth of Kern Canyon and Alfred Harrell Highway. (Rio Bravo Ranch T29S R29E S15)	Fringe of cattail/tule marsh surrounding an artificial lake.	Current management practices continue to make the pond attractive to this species.	Extant	Chickester pers. comm.

Appendix I-11. Tricolored Blackbird Nesting Observations in Kings County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/16/32	2,000 nests	Four miles southwest of Corcoran.	Tules along canal.		Presumed extirpated	Neff 1937
1970-1979						
5/4/71	25,000 ind. 17,000 nests	Eight to 10 miles south of Corcoran.	Mustard and safflower plants.	Size of colony approximately 80 acres. Nest building activity with about 3/4 completed.	Unknown	DeHaven unpublished field data
				On 5/23/71, checked colony; only 1,500 birds left. Status uncertain, but probably abandoned.	Unknown	DeHaven unpublished field data
1980-1989						
6/83	200 prs.	North side of "West Hacienda" water storage basins.	Tamarisk trees.	Possible nesting site but unconfirmed.	Unknown	Gerstenberg pers. comm.
June-July 1984	2,000 ind.	West Hacienda.	Saltbush.	About 100 nests were seen on north edge of the pond. Site visited again on 6/6/85; 500+ birds. Observed nests and nesting activity.	Unknown	American Birds file data

Appendix I-12. Tricolored Blackbird Nesting Observations in Lake County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/29/36	50 nests	Near Lakeport.	Cattail marsh.		Presumed extirpated	Neff 1937
1970-1979						
6/10/72	2,500 ind.	Three miles northwest of Nice.	Blackberries.	Observed adults feeding young.	Unknown	DeHaven unpublished field data

Appendix I–13. Tricolored Blackbird Nesting Observations in Lassen County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
5/14/80	Data not available	Four miles southeast of Standish at the intersection of county roads 302 & 305. (Standish T28N R14E S34 SW)	Intermittent pond bordered with cattails, reeds, bulrushes, etc.	Size of colony approximately 4-6 acres. Observed territorial behavior. Unknown if colony fledged young. Possible disturbances included fluctuating water levels, and cattle grazing.	Unknown	Stovall pers. comm.
7/5/82	7 males; Unknown number of females	Honey Lake Wildlife Area - Fleming Unit, 0.25 mile west of first parking area.	Intermittent water course with cattails and bulrushes.	Size of colony approximately 2.5 to 5 acres. Unknown if colony fledged young.	Unknown	Stovall pers. comm.
5/28/83	15-20 pr.	Center Road at southeast corner of Leavitt Correctional Center.	Cattail marsh (sedges, tules, grasses in surrounding grassy marsh edge, outer border of sage brush.	Observed birds feeding young on nests but not known if birds fledged. No visible disturbances to colony noted.	Unknown	Manolis pers. comm.
5/26-27/84	40-50 ind.	Same as above	Cattail marsh.	Unknown if colony fledged young; no sign of nesting.	Unknown	Manolis pers. comm.
5/25/85	20-30 ind.	Same as above	Cattail marsh.	No evidence of nesting observed, but birds nested at this location the last 2 years.	Unknown	Manolis pers. comm.
5/26/85	30-40 pr.	Mapes Lane near Dakin Unit (opposite side of road) of Honey Lake State Wildlife area.	Cattail marsh.	Size of colony approximately 0.25 acre. Observed birds feeding young on nests but not known if birds fledged. No visible disturbances to colony noted.	Unknown	Manolis pers. comm.

Appendix I-14. Tricolored Blackbird Nesting Observations in Los Angeles County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
Before 1895	Data not available	Within Los Angeles County.	Data not available.	Located several breeding colonies.	Unknown	Bendire 1895 (data from Stephens)
5/8/97	Data not available	Near Compton.	Data not available.	Nesting colony found; took 35 sets of slightly incubated eggs.	Presumed extirpated	Grinnell 1898 (data from G. F. Morcom)
1920-1949						
5/17/36	500 nests	1-1/2 miles E. of Kemp Station.	"River jungle" habitat. Nests in cattails and willows along river.		Presumed extirpated	Neff 1937
4/13/40 & 5/10/40	4-200 ind.	Dominguez Lagoon, northeast of Gardena (Nigger Slough on old maps).	Tall tule marsh and grain field.	Observed birds flying between the marsh and grain fields.	Presumed extirpated	Cogswell pers. comm.
1970-1979						
4/23/71	2,500 ind. 500-1,000 nests	1-1/2 miles northeast of Del Sur.	Giant cane at edge of 2-foot pond.	Size of colony less than 1 acre. Apparently two major nesting groups; one with eggs and the other building or finishing fresh nests. Examined 63 nests; 35 of the nests contained 1-5 eggs, 26 were fresh nests, and 2 were in the process of being built. Old nests present, probably from previous year. Three birds found dead around pond for unknown reasons.	Unknown	DeHaven unpublished field data

Appendix I-14. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
1981 or 1982	75-100 ind.	Madrona Marsh located in the City of Torrence.	Vernal pool area with tules.	Not sure if colony is still active.	Unknown	Collins, pers. comm.
May 1989	50-70 prs.	Northernmost part of El Dorado Regional Park in East Long Beach near the 605 freeway just above Wardlaw Road.	Man-made lake with several large clumps of tules.	Unknown if colony nested at this site.	Extant	Collins pers. comm.
	Data not available	Harbor Lake near City of San Pedro.	Reeds.	Possibly a new colony. Successful nesting indicated by observation of fledged young just out of the nest. A former breeding colony; still observe tri-coloreds here during the summer. Also, tricoloreds probably nested in the Antelope Valley but are now observed only during winter and appear to be in reduced numbers from a decade ago. Perhaps the species nests locally around a few ranch ponds. Overall, "...the species is declining and is doing so alarmingly."	Presumed extant; habitat extant	Dunn pers. comm.

Appendix I–15. Tricolored Blackbird Nesting Observations in Madera County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1900-1919						
4/28/ 1900	Hundreds of ind.	Near northern Madera County line.	Small patch of tules (6-10 feet high) surrounded by a shallow pond near an artesian well.	Many nests found which contained young approximately 24-48 hours old. Some nests contained eggs in the last stages of incubation. Found nests that contained decayed or partially dried, broken eggs. Exposed nests seemed to have been robbed, possibly by Swainson's hawks, which were numerous.	Unknown	Mailliard 1900
1970-1979						
4/22/75	5,000 ind.	Avenue 7, 1 mile east of the intersection of Avenue 7 and Road 16.	Tules along Cottonwood Creek.	Size of colony approximately 0.5 acre. Nest building activity in 2nd or 3rd day.	Unknown	DeHaven unpublished field data

Appendix I-16. Tricolored Blackbird Nesting Observations in Marin County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
4/17-20/26	Data not available	Short distance north of Point Reyes.	Dense growth of raspberry bushes.	Nesting colony found. Birds were just beginning to build nests.	Unknown	Booth 1926
5/14/33	Data not available	North of White Gulch, east of Tomales Point, Tomales Bay.	Data not available.	Colony observed by John Cushing, who noted that "The parents were quite tame and the females sat in anxious groups at one end of the thicket while I searched the other."	Unknown	Natural Diversity Data Base (data from Neff 1937)
1980-1989						
6/8/80-7/15/80	110 ind.	West side of Drake's Beach pond, Pt. Reyes National Seashore.	Bulrush and tule.	Colony observed on five separate dates during the breeding season including observations of carrying nesting material (6/8) to feeding fledglings (7/15) suggesting successful breeding at this site during 1980. Colony abandoned by 7/31. Like most areas in Marin County, this site does not support breeding tricoloreds each year.	Unknown	Shuford pers. comm.
4/28/82	50-100 ind.	Brazil Ranch, southeast of Dillon Beach.	Blackberry, salmonberry thicket.	Birds displaying/nest building on 4/28. A second visit (6/3) indicated the site was abandoned for unknown reasons.	Unknown	Shuford pers. comm.

Appendix I-16. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/20/86	50 prs.	Near Lake McSwain.	Information not available.	Colony of 50 nests.	Unknown	American Birds file data
5/19-31/88 & 6/7-21/88	500 prs.	Livermore Marsh and Cypress Grov Preserve; 1 mile northwest of Marshall on the east shore of Tomales Bay. (Tomales 38 deg. 10'N, 122 deg. 53'W)	Freshwater marsh; bulrushes and open water.	Size of colony approximately 1.2 hectares with 0.3 hectares of bulrush/nest area. Nest success estimated at 45 percent; eggs fledged from successful nests estimated at 59 percent; overall nesting success was 26.6 percent. Observation of nests revealed broken egg shells in a few nests and a few torn nests; many nests suffered partial nest losses. Nest destruction possibly due to breeding marsh wrens. No apparent disturbances to colony observed.	Unknown	Kelly pers. comm.
				Opportunistic use of marshes in Marin County; colonies may be present at some sites (e.g., Olema Marsh or Drakes Beach) and absent for several years, or not return at all.		Stallcup pers. comm.

Appendix I–17. Tricolored Blackbird Nesting Observations in Merced County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1900-1919						
5/27/16-6/13/16	20,000 nests	Near Dos Palos.	Swamps, tules and cattails.	Very large nesting area. Examined 3,500 nests.	Presumed extirpated	Dawson 1919
1916	Data not available	Near Los Banos.	Tules and cattails.	Large nesting area found.	Presumed extirpated	Dawson 1921
1920-1949						
5/14/32	50,000 nests	Fifteen miles northwest of Merced.	Thistles.		Presumed extirpated	Neff 1937
4/23/33	15,000 nests	Eight miles north of Atwater.	Cattail marsh.		Presumed extirpated	Neff 1937
4/26/33	100 nests	Three miles southwest of Merced.	Cattail marsh.		Presumed extirpated	Neff 1937
4/27/33	250 nests	North of Merced.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Near Hoff Station.	Cattail marsh.		Presumed extirpated	Neff 1937
4/28/33	1,000 nests	Four miles SW of Livingston.	Cattail marsh.		Presumed extirpated	Neff 1937
5/2/33	2,500 nests	Three miles northeast of Snelling.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,500 nests	Two miles south of Snelling.	Cattail marsh.		Presumed extirpated	Neff 1937
	500 nests	One mile east of Snelling.	Cattail marsh.		Presumed extirpated	Neff 1937
5/4/33	4,000 nests	Two miles south of Livingston.	Cattails along slough.		Presumed extirpated	Neff 1937
	6,000 nests	Eight miles SW of Livingston.	Cattail marsh and willows.		Presumed extirpated	Neff 1937
5/9/33	2,500 nests	Near Merced.	Cattails along canal.		Presumed extirpated	Neff 1937

Appendix I–17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/10/33	3,000 nests	Near Merced.	Cattails along creek.		Presumed extirpated	Neff 1937
	5,000 nests	Four miles northeast of Merced.	Cattails and willows along creek.		Presumed extirpated	Neff 1937
5/12/33	7,500 nests	Fifteen miles south of Merced.	Cattail marsh.		Presumed extirpated	Neff 1937
	300 nests	Near El Nido.	Cattails around reservoir.		Presumed extirpated	Neff 1937
5/19/33	1,500 nests	Southwest of Merced.	Cattails along canal.		Presumed extirpated	Neff 1937
5/26/33	1,500 nests	Five miles northeast of Snelling.	Willows along creek.		Presumed extirpated	Neff 1937
6/5/33	2,000 nests	Near Delhi.	Cattail marsh.		Presumed extirpated	Neff 1937
	3,000 nests	Four miles south of Turlock.	Cattail marsh.		Presumed extirpated	Neff 1937
6/11/34	1,000 nests	Merced.	Cattails along canal.		Presumed extirpated	Neff 1937
6/12/34	500 nests	Near El Nido.	Cattails around reservoir.		Presumed extirpated	Neff 1937
4/25/35	150 nests	South of Livingston.	Cattails along canal.		Presumed extirpated	Neff 1937
5/27/35	1,250 nests	Four miles north of Merced.	Cattails along canal.		Presumed extirpated	Neff 1937
5/28/35	5,000 nests	Two miles south of Snelling.	Cattail marsh.		Presumed extirpated	Neff 1937
	600 nests	One mile south of Snelling.	Cattails along slough.		Presumed extirpated	Neff 1937
	1,000 nests	Eight miles north of Atwater.	Cattail marsh.		Presumed extirpated	Neff 1937
	400 nests	Near Hoff Station.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,500 nests	Near Merced.	Cattails along canal.		Presumed extirpated	Neff 1937
	1,000 nests	Near El Nido.	Cattails around reservoir.		Presumed extirpated	Neff 1937
	1,000 nests	Near Livingston.	Cattails along canal.		Presumed extirpated	Neff 1937
	1,500 nests	Near Livingston.	Cattails and willows along slough.		Presumed extirpated	Neff 1937
	4,000 nests	South of Livingston.	Cattails along canal.		Presumed extirpated	Neff 1937

Appendix I-17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
	3,000 nests	South of Livingston.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,500 nests	South of Livingston.	Cattail marsh.		Presumed extirpated	Neff 1937
	5,000 nests	South of Livingston.	Cattail marsh.		Presumed extirpated	Neff 1937
	2,500 nests	Northeast of Los Banos.	Cattail marsh.	Three localities.	Presumed extirpated	Neff 1937
	7,500 nests	San Joaquin River bridge.	Cattails and willows along canal.		Presumed extirpated	Neff 1937
6/5/36	2,000 nests	Near Merced.	Cattails along canal.		Presumed extirpated	Neff 1937
6/6/36	1,000 nests	Near Dos Palos Junction.	Cattails/willows in riverbank jungles.		Presumed extirpated	Neff 1937
	2,000 nests	Lucerne Ranch.	Cattail marsh.		Presumed extirpated	Neff 1937
6/7/36	2,000 nests	Near Snelling.	Cattails along slough.		Presumed extirpated	Neff 1937
	1,500 nests	Arundel Station.	Cattail marsh.		Presumed extirpated	Neff 1937
	1,000 nests	Near Merced.	Cattails along canal.		Presumed extirpated	Neff 1937
1970-1979						
4/25/70	300 nests	Marsh behind shop building, San Luis National Wildlife Refuge.	Cattail/tule marsh.		Unknown	Sipe pers. comm. (letter to DeHaven)
4/28/71	500 ind.	Along eastside of Interstate 5, near Gustine overpass (#1)	Drainage ditch with cattails/tules in flat, grassy, irrigated and nonirrigated pastures.	Possibly incubating but not verified.	Unknown	DeHaven unpublished field data

Appendix I–17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/5/71	3,500 ind. 1,800 nests	Five miles due east of Los Banos.	Tule-filled ditches; water 2-4 feet deep.	Size of colony approximately 2 acres. Observed seven day-old nestlings, 17 fledglings, and 17 dead nestlings (killed by rain). Noted that many nests are being built; possible renesting attempt. 5/13/71 - observed more fledglings. 5/26/72 - Tried to recheck site but "no trespassing" signs every few feet along fence. Presumed adults feeding young.	Unknown	DeHaven unpublished field data
5/6/71	1,200 ind. 800 nests	Intersection of Interstate 5 and Highway 140, approximately 5 miles west of Gustine.	Tules; water 1-2 feet deep.	Size of colony approximately 1 acre. Observed five day-old nestlings and seven fledglings. Noted that many new nests are being built; possible renesting attempt.	Unknown	DeHaven unpublished field data
5/6/71	2,500 ind.	Santa Fe Grade #1, 2.5 miles south of Gun Club Road and approximately 5 miles southwest of Gustine.	Bulrush; water 0-1 foot depth.	Checked 31 nests with eggs: three with four eggs, 19 with three eggs, six with two eggs, and three with one egg. 5/13/71 - most nests with eggs are ready to hatch or are hatching. Noted many missing or broken eggs in nests; some with eggshells still present. Only about two to three eggs left per clutch.	Unknown	DeHaven unpublished field data

Appendix I–17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/6/71	3,000 ind. 1,800 nests	Gun Club Road, 2 miles east of Hunt Road turnoff and 2 miles south of Gustine.	Tule ditch; water 1-2 feet deep.	Checked 18 nests: 15 with one egg and three with two eggs.	Unknown	DeHaven unpublished field data
5/6/71	1,100 ind. 750 nests	Sante Fe Grade #2, 1.6 miles south of Santa Fe Grade #1 above. Approximately 8 miles southwest of Gustine.	Tules; water 2 feet deep.	Size of colony approximately 0.5 acre. Observed 16 nests: three with four eggs, six with three eggs, five with two eggs, and two with one egg.		
				5/13/71 - observed young about 3-4 days old.	Unknown	DeHaven unpublished field data
5/9/71	1,500 ind.	South side of Highway 140; 4-1/2 miles west of Merced.	Blackberries in irrigated pastures.	Size of colony approximately 1/25 of an acre. Presumed nesting but unknown; area too inaccessible to reach.	Unknown	DeHaven unpublished field data
5/13/71	1,500 ind. 750 nests	One mile east of Gun Club Road colony (abandoned) and 3/4 mile southeast of the Gustine Airport.	Cattail in 2 to 3 feet of water.	Size of colony approximately 1.5 acres. Observed incubation of eggs (about 2 days). Noted egg stains in many nests; strong predation from something.	Unknown	DeHaven unpublished field data
5/13/71	Data not available	One-half mile east of Gun Club Road colony (above).	Cattail and bulrush.	Did not check but probably same stage (incubation) as Gustine Airport (above).	Unknown	DeHaven unpublished field data
5/14/71	250 nests	Kesterson National Wildlife Refuge.	Data not available.	Noted 90 percent of eggs hatched on 5/24/71.	Unknown	DeHaven unpublished field data
5/25/71	3,000 ind.	Along eastside of Interstate 5, near Gustine overpass (#2). (See 4/28/71 report.)	Drainage ditch with cattails/tules in flat, grassy, irrigated and nonirrigated pastures.	Observed new nests and noted several with one, three, and four eggs.	Unknown	DeHaven unpublished field data

Appendix I-17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/25/71	6,000 ind.	Santa Fe Grade #3, 1/4 mile north of Santa Fe Grade #1.	Tules, some bulrush; water 1-2 feet deep.	Size of colony approximately 3 acres. No observation of actual nesting but noted many birds singing and flying to nearby fields.	Unknown	DeHaven unpublished field data
6/3/71	7,500 ind. 5,000 nests	Merced National Wildlife Refuge.	Tules and bulrush; water 1-2 feet deep.	Size of colony approximately 2 acres. Noted nest building activity.	Unknown	DeHaven unpublished field data
5/14/72, 5/20/72, & 5/30/72	Data not available	Six miles north of Los Banos.	Freshwater cattail and bulrush marsh.	Nest building observed on 5/14. On 5/20 approximately 75 nests estimated. Some nests contained eggs. On 5/30 visit, colony was apparently abandoned for unknown reasons.	Unknown	Cornell University, Laboratory of Ornithology (data from Sipe)
5/25/72	500 ind.	One mile northeast of last year's colony (Junction of Interstate 5 and Highway 140 - 5/6/71).	Cattail pond.	Size of colony approximately 0.3 acre. Colony has already fledged young.	Unknown	DeHaven unpublished field data
5/25/72	12,000-15,000 ind.	Near Gustine Airport (same general as 5/13/71 colony).	Cattail slough next to sewage ponds.	Size of colony approximately 3 acres. Observed young 5-8 days old.	Unknown	DeHaven unpublished field data
5/26/72	2,000 ind.	Five miles east of Los Banos.	Cattail/bulrush marsh.	Probably feeding young, did not check nests.	Unknown	DeHaven unpublished field data
4/25/73 & 5/30/73	200 ind.	State Route 140, southeast of Stevinson.	Tall thistles.	Tricoloreds singing and flying to and from patch of tall thistles across narrow ditch by roadside on 4/25. On 5/30, several hundred still in and near thistles, apparently nesting.	Unknown	Cogswell pers. comm.

Appendix I-17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/26/75	200 ind.	Kesterson National Wildlife Refuge, southeast part.	Marshy ponds.	Observed birds perching and flying in an area of fields and ponds; no nesting verified.	Unknown	Cogswell pers. comm.
1980-1989						
1982 & 1983	500-1,000 ind.	Merced National Wildlife Refuge at the "Glory Hole."	Emergent vegetation.	Small nesting colony found. Reported flocks of up to 10,000 individuals in 3/83.	Unknown	San Luis National Wildlife Refuge file data
1983	Data not available	San Luis National Wildlife Refuge at Loaf Lake unit.	Milk thistle.	Nesting colony found. Flocks of tricoloreds observed utilizing riparian habitat along the San Joaquin River and E-Canal.	Unknown	San Luis National Wildlife Refuge file data
1983	Data not available	Kesterson National Wildlife Refuge at evaporation cell #5.	Data not available.	Nesting colony found. During 1985, 75-150 individuals nesting at cell #5. Cell #2, 5,000 roosting.	Colony extirpated, habitat eliminated	San Luis National Wildlife Refuge file data
4/84	1,000 ind.	Lake Yosemite near Merced.	Data not available.	Breeding colony. Visited site again in 1985; 400 birds. Nesting activity observed.	Unknown	American Birds file data
4/85, 3/1/87, & 5/31/87	100 ind.	Merced National Wildlife Refuge.	Data not available.	Breeding colony. Site visited again during mid-May 1987; 1,500 birds observed. Nesting activity began, and eggs found by June 1. Also four colonies nesting at San Luis and Kesterson National Wildlife Refuges during May.	Unknown	American Birds file data

Appendix I-17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/1/86-5/10/86	47,000 ind.	Pond 5, Kesterson Reservoir, Kesterson National Wildlife Refuge. (Ingomar T8S R10E S21 NW)	Large cattail marsh, open pasture, and feedlot nearby.	Size of colony approximately 40 acres. First territorial behavior observed in early April. About 100 young fledged out of entire colony; 266 dead tricolored nestlings found on road near colony in mid-April (selenium contamination is a possible cause of mortality). Habitat eliminated by U. S. Bureau of Reclamation to reduce wildlife exposure to selenium. By early May, the colony had been abandoned. Aside from the 100 fledglings, the colony failed.	Colony extirpated; habitat eliminated	Beedy and Hayworth (in press) Coakley pers. comm.
4/7/86-5/30/86 & 4/17/87-5/26/87	1,500 ind.	Small cattail marsh behind the maintenance shop on San Luis National Wildlife Refuge. (San Luis Ranch T9S R11E S6 NE)	Cattail and tule marsh; cattails were the primary nesting substrate.	Size of colony approximately 1.5 acres. Successful nesting completed by 5/30/86. Similar for 1987. Colony was partially abandoned due to egg collecting for selenium analyses in 1987. No disturbances or threats to colony; U. S. Fish and Wildlife Service will not permit future disturbance to this colony. Adjacent maintenance building do not appear to disturb this colony.	Extant	Beedy and Hayworth (in press)
4/13/87-5/7/87	2,000 ind.	Pond 7, Kesterson Reservoir, Kesterson National Wildlife Refuge. (Ingomar T8S R10E S17 SW)	Cattail marsh, open pasture, and feedlot nearby.	Size of colony approximately 1 acre. Many observations during the nesting season. Habitat eliminated by U. S. Bureau of Reclamation to reduce wildlife exposure to selenium. Site found abandoned; colony failed. Possible disturbances by mammalian predators.	Colony extirpated; habitat eliminated	Beedy and Hayworth (in press)

Appendix I-17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/13/87-5/29/87	200 ind.	Pond I, Kesterson Reservoir, Kesterson National Wildlife Refuge. (Ingomar T8S R10E S21 SW)	Large cattail marsh, open grass-land, and feedlot nearby.	Size of colony approximately 1 acre. Many observations during the breeding season. About one-half of the pairs fledged young. Habitat eliminated by U. S. Bureau of Reclamation to reduce wildlife exposure to selenium. Possible disturbance to colony by predators.	Colony extirpated; habitat eliminated	Beedy and Hayworth (in press)
5/12/87-7/2/87	7,500 ind.	Pond 5, Kesterson Reservoir, Kesterson National Wildlife Refuge. (Ingomar T8S R10E S21 NW)	Large cattail marsh, open pasture, and feedlot nearby.	Size of colony approximately 4 acres. Many observations during the nesting season. About 50 young fledged. Habitat eliminated by U. S. Bureau of Reclamation to reduce wildlife exposure to selenium. Active hazing by U. S. Fish and Wildlife Service to scare birds from the contaminated reservoir may have caused colony to partially fail.	Colony extirpated; habitat eliminated	Beedy and Hayworth (in press)
5/5/87 and 6/17/87	2,000 ind.	Mud Slough, approximately 0.25 mile north of Pond 12 of Kesterson Reservoir.	Cattail and tule marsh.	Size of colony approximately 1-2 acres. Territorial behavior noted on 5/15/87 and feeding young on 6/17/87. Presumed colony was successful in fledging young. Appears that this site was only used 1 year. This colony appeared after tricoloreds were actively hazed from Kesterson Reservoir by the U. S. Fish and Wildlife Service.	Presumed extant, habitat extant	Beedy (file data)
June 1988	1,500-2,500 prs.	Gallo Ponds, Kesterson National Wildlife Refuge; 2 miles east of Santa Fe Grade and Highway 140 intersection.	Semi-permanent freshwater marsh interspersed with grass uplands; dense cattail stands in 1.5 feet of water.	Size of colony approximately 15 acres. Observed an unknown number of fledglings.	Presumed extant; habitat extant	Klett pers. comm.

Appendix I–17. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
Year long	25-100 prs.	Cattail/tule. Grasslands Resource Conservation District.	Permanent marsh maintained through the waterbank program.	Unknown if colony fledged young.	Presumed extant; habitat extant	Beam pers. comm.
5/16/89, 6/13/89, & 6/20/89	3,000-4,000 prs.	South Gadwall Pond, Kesterson National Wildlife Refuge, east of Cell 7, Kesterson Reservoir.	Permanent freshwater marsh inter-spersed with grass uplands; dense cattail stands in 2 feet of water.	Size of colony approximately 10 acres. Not all of the 3,000-4,000 birds were were breeding. Noticed egglaying on 5/16, and on 6/13 visit, observed 2,000-3,000 fledglings.	Presumed extant; habitat extant	Klett pers. comm.

Appendix I-18. Tricolored Blackbird Nesting Observations in Monterey County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/4/32	750 nests	4.5 miles northwest of Salinas.	Cattails/tules along slough.		Presumed extirpated	Neff 1937
5/4/32	400 nests	San Juan Grade.	Cattail marsh.		Presumed extirpated	Neff 1937
5/21/32	3,000 nests	3.5 miles northeast of Castroville.	Tules along slough.		Presumed extirpated	Neff 1937
5/20/36	2,000 nests	Near Salinas.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
1960-1969						
4/30/60	Thousands of ind.	Warner Lake (1.6 miles south by east of Pajaro in the extreme northern portion of Monterey County).	Wide belt of tall tule marsh bordering pond of several acres.	Size of pond several acres. Tricoloreds observed flying to and from colony. Males more evident than females in flocks commuting to low grassy hills to south. Many males in marsh were singing. Visited site again on 6/22/63; no tri-coloreds present.	Presumed extirpated	Cogswell pers. comm.
6/22/63	300 ind.	Hall and vicinity, northeast of Elkhorn Slough.	Data not available.	Observed males and females flying to and from presumed nesting colony on Las Lomas Ranch.	Presumed extirpated	Cogswell pers. comm.
1970-1979						
4/71	1,000 ind.	Junction of Old San Juan Grade and Crazy Horse Road.	Marsh.		Unknown	Yadon pers. comm. (letter to DeHaven)

Appendix I-18. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/28/71	5,000 ind. 2,500 nests	Approximately 7 miles north-northeast of Salinas.	Pond with bulrush surrounded by nonirrigated grassland hill and orchards. Water 2-5 feet deep.	Size of colony approximately 1.75 acres. Examined 132 nests; most contained one to five eggs and some were freshly built nests.	Presumed extirpated	DeHaven unpublished field data
				Revisited site on 5/13/71. Noted about 2,000 individuals present. Young observed jumping from nests. Birds have renested and most nests contain three 8-10 day-old eggs. Estimated that approximately half of the birds have abandoned the colony.	Unknown	DeHaven unpublished field data
<u>1980-1989</u>						
4/8/85	300 pr.	Laguna Seca.	Data not available.	None.	Unknown	American Birds file data
4/28/85	1-2 prs.	Cholame Valley pond.	Data not available.	Observed female carrying food among 50 pairs of red-winged blackbirds. This is a new nest location far from the previously known sites in the county.	Extirpated; pond dry in 1989.	Roberson pers. comm.
6/6/85	7+ ind.	Carmel Valley Road.	Marsh.	Adults observed feeding nearly full-grown young. "Dry by August."	Unknown	American Birds file data
3/26/88-5/15/88	1,000 prs.	El Piojo Reservoir; 25 km west of Cape San Martin; 9.3 km north of the San Luis Obispo County line; 7 km southwest of Lockwood; 10.2 km south of Jolon.	Most of the colony was in a dense cattail marsh in the seep below the dam. The small part of the colony (approximately 2 percent) was in the cattails at the opposite side of the pond.	Two colonies observed; approximate size: main was 1-2 acres, and small colony was 0.5 acre. Main colony was not successful in fledging young; small colony was partially successsful. No significant disturbances observed at main colony; small colony possibly disturbed by presence of fisherman and soldiers. Pond dried out and all birds gone by May 30. No birds found during 1989.	Extirpated; pond dry in 1989.	Roberson pers. comm. (Data from Ryno)

Appendix I-18. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/7/88	200 ind.	Above Robinson Canyon (San Clemente Rancho).	Pond.	Nesting building in early April. By late May, numerous fledglings present. Pond had lots of water in June.	Unknown	Campbell pers. comm. (data from American Birds file)
4/21/88	10-100 prs.	Bald Mountain block pond, on Fort Hunter-Liggett, southwest sector.	Pond.	Observed nests with eggs. Unknown if colony fledged young. On 5/24, no tri-coloreds present; dry weather eliminated the pond.	Extirpated; pond dry in 1989.	Roberson pers. comm. (Data from Ryno)
5/12/88	10-100 prs.	Near Salinas sewer ponds.	Data not available.	Tricolored blackbirds observed on apparent nest site during breeding season. Unknown if colony nested at this site.	Unknown	Roberson pers. comm. (Data from Gerow)
6/3/88	100 prs.	Gatehouse pond off Carmel Valley Road; entrance to San Clemente Rancho property.	Pond.	Observed adults feeding young; unknown if colony fledged young.	Unknown	Roberson pers. comm.
2/26/89	100 prs.	Laguna Seca (Grande?) ponds.	Data not available.	This site is the only one regularly colonized and reported over the years.	Extant	Roberson pers. comm.
4/21/89, 5/16/89, & 5/18/89	300 prs.	Two miles northeast of the "intersection" of Nacimiento Road and the Fort Hunter Liggett/Los Padres National Forest boundary and 3.4 miles northeast of Lower Stoney Reservoir.	Cattails at spillway where birds nest.	Colony size approximately 0.5 acre. Successful nesting indicated by observation of fledged young. Potential threat to colony may be amount of air traffic.	Extant	Ryno pers. comm.

Appendix I-19. Tricolored Blackbird Nesting Observations in Orange County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/10/36	250 nests	Near Laguna Beach.	Cattails around swamp.		Presumed extirpated	Neff 1937
1980-1989						
Around 1986 and 1987	Less than 100 ind.	Huntington Beach near Huntington Central Park.	Pond with cattail and bulrush.	o Huntington Central Park - small year-round colony of 50-100 birds. Observed nesting a few years ago. Current breeding status unknown. o Laguna Hills; Veeh Reservoir - small year-round colony of 100+ birds have been present for 2-3 years. Breeding status unknown.	Unknown	Willick pers. comm.
5/4-26/88 & 6/7-9/88	10 prs.	Near El Toro, California.	Stock pond surrounded by dryland barley. Nesting substrate consists of bulrush.	Size of colony approximately 2 acres. Observed adults feeding young on 5/24-26/88. Unknown if colony fledged young. Visible threat to colony includes probable development of the area.	Unknown	Whisler pers. comm.
3/12/89	40-50 prs.	Huntington Beach: Carr Park at Heil and Springdale.	Small cattail and bulrush pond with island in the middle.	Nest building observed on 3/12. Fledglings seen by other observers (dates unknown).	Extant	Willick pers. comm.
4/1/89	500-600 prs.	Peter's Canyon Reservoir (east of City of Orange) near the intersections of Santiago Canyon Road, Chapman Avenue, and Newport Avenue.	Large reservoir, densely lined with cattail and bulrush.	Size of colony less than 1 acre. Not sure if this is a breeding colony. A large foraging area near the reservoir is currently being developed.	Extant	Willick pers. comm.

Appendix I-19. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/1/89	80-120 prs.	Mouth of Bommer Canyon near Bonita Canyon Road in Irvine.	Small cattail and bulrush pond.	Observed flock of about 50 tricoloreds feeding at a nearby park. Approximately half appeared to be juveniles. In March, tricoloreds took over the red-winged blackbirds' winter colony for the third year in a row. Tricoloreds are an uncommon (and declining) local summer resident in the county and a slightly more common visitor during the winter.	Extant	Willick pers. comm.
1989 nesting season	1,510 ind.	Upper end of Canada Chiquita. (Canada Gobernadora T7S R7W S9 SW)	Cattails/bulrush.	Counts were not made in 1990 but numbers appeared comparable to numbers observed in 1989.	Extant	Bontrager 1990
1989 nesting season	260 ind.	Chiquita Canyon Narrows, Canada Chiquita. (Canada Gobernadora T7S R7W S16)	Cattails/bulrush.	Counts were not made in 1990 but numbers appeared comparable to numbers observed in 1989.	Extant	Bontrager 1990 Bloom pers. comm.
1989 nesting season	420 ind.	Calmat Settling Basin. (Canada Gobernadora T7S R6W S36 SW)	Cattails/bulrush.	Numbers possibly higher in 1990.	Extant	Bontrager 1990
1989 nesting season	380 ind.	Riverside Cement leasehold wet-lands. (San Clemente T8S R6W)	Manmade ponds with emergent vegetation, such as cattails.	This site was not used in 1990.	Unknown	Bontrager 1990
<u>1990</u>						
1990 nesting season	200-300 ind.	Dipcrossing, north of San Juan Creek (Canada Gobernadora T7S R7W S28 NW)	Cattails.	Not occupied in 1989 nesting season.	Extant	Bontrager 1990

Appendix I-20. Tricolored Blackbird Nesting Observations in Placer County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/26/33	1,000 nests	Lincoln.	Cattails along canal.		Presumed extirpated	Neff 1937
5/26/36	1,500 nests	Near Lincoln.	Cattails along canal.		Presumed extirpated	Neff 1937
1970-1979						
1971	2,000 prs.	Chamberlain Ranch, approximately 4 miles north-northwest of Lincoln. (T13N R6E NW 1/4 SW 1/4 S28)	Cattails around a marsh created by watering pasture lands.		Presumed extirpated	Natural Diversity Data Base (data from DeHaven)
					No recent tricolored blackbird records for Placer County	Laudenslayer pers. comm.

Appendix I-21. Tricolored Blackbird Nesting Observations in Riverside County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1950-1959						
3/5/50	500 ind.	Lake Norconian, 1 mile south-southwest of Norco (elevation: 650 feet).	Tules.	Tricoloreds observed flying from tules and adjacent U. S. Naval Hospital trees to adjacent fields. At least two females seen with nest material. This may have been part of the 1946 colony from Mill Creek Marsh, about 3 miles to the north-west (see San Bernardino County).	Unknown	Cogswell pers. comm.
4/27/50	200 ind.	Chino Creek Valley (elevation: 490 feet).	Small patch of tules along creek.	Observed males and females flying to and from alfalfa fields; nesting presumed but not verified.	Unknown	Cogswell pers. comm.
4/6/51	50 ind.	Fairmount Park (elevation: 800 feet).	Tall tules.	Observed about 35 singing males and a number of females, one which held nesting material in her bill for more than 5 minutes. Doubt that tricoloreds would actually nest in this heavily used city park. Visited site again on 4/28; none present.	Unknown	Cogswell pers. comm.
1970-1979						
4/24/71	750 ind. 750 nests	1 mile northwest Alberhill.	Cattail, bullrush, and willow. Riparian stream bottom surrounded by dry chaparral hills. Water 3-4 inches deep, but mostly dry now.	Size of colony 1.5-2 acres. Successful nesting indicated by observation of fledged young. Examined 60 nests; 42 fresh empty nests, five nests contained one dead young, three nests knocked down, four nests contained one live young, six nests contained one old egg, and one nest contained three old eggs. Mortality due to both predation and natural causes.	Unknown	DeHaven unpublished field data

Appendix I-21. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
1983-1986	20 prs.	Fisherman's retreat membership trailer park: 32300 San Timoteo Canyon Road, Redlands, CA.	Freshwater marsh with bulrush and cattail.	Size of colony approximately 0.5 acre. Colony has been successful in fledging young in past years but specific dates not known. Potential disturbances to colony may have included activity of trailer park and fisherman, etc.	Unknown	Ramirez-Kelley pers. comm.
3/25/89-6/7/89	3,000 prs.	San Jacinto Wildlife Area, 3 miles north of Lakeview in marsh immediately south of Pond 1. (El Casco T3S R2W S29)	Alkaline "freshwater" cattail and tule marsh.	Size of colony approximately 3-4 acres. Successful nesting indicated by observation of hundreds of fledglings. No disturbances known. Likely predators include common raven, long-tailed weasel, northern harrier, and black-crowned night heron. This same location used as a nesting site in 1988 (the first year the marsh was developed). Also in previous wet years, tricoloreds nested in the nearby old San Jacinto River channel.	Extant	Craig pers. comm.

Appendix I–22. Tricolored Blackbird Nesting Observations in Sacramento County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
4/25/32	120,000 nests	Eighteen miles east of Sacramento.	Cattails/tules along reservoir.		Presumed extirpated	Neff 1937
5/5/32	1,000 nests	Near Folsom.	Cattails along reservoir.		Unknown	Neff 1937
5/28/33	1,000 nests	Near Folsom.	Cattail marsh.		Unknown	Neff 1937
6/3/33	100,000 nests	Eighteen miles east of Sacramento.	Cattails\tules around reservoir.		Presumed extirpated	Neff 1937
5/10/34	75,000 nests	Seventeen miles east of Sacramento.	Cattails around reservoir.		Presumed extirpated	Neff 1937
5/15/34	5,000 nests	Eighteen miles north of Sacramento.	Cattail marsh.		Presumed extirpated	Neff 1937
5/26/35	1,000 nests	Nimbus Ranch.	Cattails around reservoir.		Presumed extirpated	Neff 1937
5/31/36	3,000 nests	Near Folsom.	Cattails around reservoir.		Unknown	Neff 1937
	5,000 nests	Near White Rock Station.	Cattails around reservoir.		Presumed extirpated	Neff 1937
	7,500 nests	Near Ney School.	Cattails around reservoir.		Presumed extirpated	Neff 1937
1950-1959						
Spring 1959	14,000 nests	Mustard patch, 10 miles north of Sacramento on Highway 24.	Mustard.	Size of colony approximately 3 acres. Began nest building on 5/1, egglaying on 5-5, incubating on 5/7, and feeding young on 5/19.	Unknown	Orians 1961
Spring 1959	50,000 nests	Alfalfa field, 10 miles north of Sacramento on Highway 24.	Alfalfa.	Began nest building on 5/9, egglaying on 5-13 (most nests checked contained three eggs), incubating on 5/16, and feeding young on 5/28. On 6/11, young just out of nests.	Unknown	Orians 1961

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
Spring 1959	75,000 nests	County Line, just east of Highway 24 just south of border between Sacramento and Sutter Counties.	Oat-alfalfa field.	Began nest building on 5/15, egglaying on 5/18, incubating on 5/20, and feeding young on 6/3.	Unknown	Orians 1961
1960-1969						
Spring 1960	500 nests	Riego Road (site A).	Data not available.	Began nest building on 5/17, egglaying on 5/21, incubating on 5/25, and feeding young on 6/4.	Unknown	Orians 1961
Spring 1960	30,000 nests	Riego Road (site B).	Data not available.	Began nest building on 5/28, egglaying on 6/1, incubating on 6/4, and feeding young on 6/15.	Unknown	Orians 1961
Spring 1960	4,000 nests	County Line, just east of Highway 24 just south of border between Sacramento and Sutter Counties.	Oat-alfalfa field.	Began nest building on 5/17, egglaying on 5/20, incubating on 5/23, and feeding young on 6/2.	Unknown	Orians 1961
1970-1979						
4/13/71	150+ ind.	Highway 99, just off west side, 3 miles north of Galt (Twin Cities overpass).	Blackberry surrounded by irrigated grassland pasture.	Total size of habitat 0.05 acre. Several females seen carying nest material. Observed two completed nests. Neither males or females territorial yet. Revisited site on 4/23/71. Incubation stage of nesting; observed two nests with four eggs each.	Unknown	DeHaven unpublished field data

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				5/4/71 - found four nests with young 1 to 2 days old in each. Estimate fledging about 5/17 or 5/18. On 5/7/75, noted about 500 tricoloreds in 2nd or 3rd day of nest building.		
5/3/71	12-15 ind. 6-7 nests	Two miles south of Folsom on Scott Road.	Blackberries bordering irrigation ditch.	Size of colony approximately 0.02 acre. Could not get across ditch but presumed birds are incubating eggs.	Unknown	DeHaven unpublished field data
5/4/71	25,000 ind. 1,000 nests	North of Clay, 1.25 miles.	Pond with cattail (90 percent) and bulrush (10 percent). Water depth 1-3 feet deep. Nonirrigated pasture nearby.	Size of colony approximately 3 acres. Much nest building activity, especially in the middle of the colony; nests have not yet been started in the outer portion of the colony, probably due to a later arrival by the birds. Colony is much larger than the previous year.	Unknown	DeHaven unpublished field data
5/4/71	300 ind. 200 nests	Herald, 3/4 mile east.	Blackberries with irrigated and nonirrigated pastures and grain crops nearby.	Size of colony approximately 0.05 acre. Young just beginning to hatch. Colony is much smaller than the previous year.	Unknown	DeHaven unpublished field data
5/4/71	700 ind.	Three miles north of Galt (0.75 mile east of the junction of McKenzie and Twin Cities Roads).	Blackberries surrounded by irrigated and nonirrigated pastures and alfalfa.	Size of colony approximately 0.05 acre. Nest building activity observed.	Unknown	DeHaven unpublished field data

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/5/71	22,000 ind. 8,500 nests	Three-fourths mile northeast of 4/13/71 colony, above; 1-4 miles north of Galt.	Cattail, little bulrush. Mostly dead with little new growth surrounded by irrigated and non-irrigated pasture (water 1-5 feet deep).	Size of colony approximately 9 acres. Most nests freshly completed and contained four eggs (90 percent); some found with three. Empty nests with young fledged (6 percent); young in nests (2 percent); and freshly built nests (2 percent). Found four day-old dead young, probably due to heavy rains of 5/3 and 5/4. Revisited site 5/17/71 - about one-half of the birds have abandoned the colony; the remainder of nests contained 2-3 day old young.	Unknown	DeHaven unpublished field data
4/20/72	100 ind. 65 nests	One-half mile north of Twin Cities Road and Interstate 80.	Blackberries.	Size of colony approximately 0.1 acre. acre. Noted freshly laid eggs.	Unknown	DeHaven unpublished field data
5/9/72	5,000 ind. 3,500 nests	Two miles east-northeast of Herald.	Tules; water 3 feet deep.	Size of colony less than 1 acre. Two stages of nesting: nests containing one to five eggs and nests containing one to four young. Some old nests were noted.	Unknown	DeHaven unpublished field data
5/9/72	5,000 ind. 500-600 nests	One mile east of Herald.	Blackberries and willows.	Size of colony approximately 1 acre. Observed nest building activity.	Unknown	DeHaven unpublished field data

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/9/72	750 ind.	Alta Mesa Road, approximately 5 miles east of Burrows Road.	Tules and bulrush.	Size of colony less than 1 acre. Observed nests containing one to four eggs and nests containing one to four young. Some old nests were noted.	Unknown	DeHaven unpublished field data
5/9/72	700 ind.	Bessaw Road, 0.5 mile south of Cherokee Road.	Bulrush/tule ditch.	Size of colony approximately 1 acre. Incubation stage of nesting.	Unknown	DeHaven unpublished field data
5/72	2,000 ind.	Sandage Road (off Bradshaw).	Blackberries.	Observed nests containing one to four eggs. Old nests present.	Unknown	DeHaven unpublished field data
5/72	2,000 ind.	Eagles Nest and Florin Roads.	Tules.	Observed nests containing one to four eggs. Old nests present.	Unknown	DeHaven unpublished field data
5/72	Data not available	Highway 16 just east of Eagles Nest Road.	Tules.	Observed nests containing one to four eggs. Old nests present.	Unknown	DeHaven unpublished field data
6/7/72	10,000 ind.	Just west of Highway 99 near Grant Line exit; 12 miles south of Sacramento.	Cattail or bulrush marsh.	Probable nesting area but did not confirm.	Unknown	DeHaven unpublished field data
4/18/74	1,000 ind.	One-half mile north of Twin Cities Road and Interstate 80.	Blackberries.	Size of colony approximately 0.2 acre. Nest building activity completed; 1/4 of the nests contained one egg. On 4/22/74, 75 percent of colony abandoned, and on 5/14/74, 100 percent abandoned.	Unknown	DeHaven unpublished field data

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/22/74	10,000 ind.	One-half mile east of Herald.	Blackberries.	Size of colony approximately 0.5 acre. Noted nest building in second or third day. On 4/29/74, 50 percent of colony abandoned, and on 5/14/74, 100 percent abandoned.	Unknown	DeHaven unpublished field data
4/29/74	15,000 ind.	One mile south of Morengo and Twin Cities Road.	Blackberries.	Size of colony approximately 1.5 acres. Noted nest building in second or third day. On 5/14/74, 100 percent of colony abandoned.	Unknown	DeHaven unpublished field data
4/29/74	3,000 ind.	One mile west of Folsom.	Blackberries.	Size of colony approximately 0.1 acre. Appears to be three stages of nesting: singing, nest building, and incubation.	Unknown	DeHaven unpublished field data
5/14/74	1,000 ind.	Mingo Road, 0.5 mile east of Highway 99.	Blackberries.	Size of colony approximately 0.1 acre. Nest building activity. On 5/30/74, 75 percent of colony abandoned and some young 2-3 days old.	Unknown	DeHaven unpublished field data
4/30/75	15,000 ind.	Morengo Road, 1/4 mile south of Twin Cities Road (near 4/29/74 colony).	Blackberries.	Size of colony approximately 0.5 acre. Incubation stage of nesting with 2-3 day-old eggs. On 5/5/75, some abandonment of colony noted.	Unknown	DeHaven unpublished field data

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				On 5/12/75, 80 percent of colony abandoned.		
4/30/75	3,000 ind.	Placerville Road, 1.5 miles south of Folsom.	Blackberries.	Size of colony approximately 0.1 acre. Predict that nest building will occur within 2-3 days. On 5/16, 5/19, and 5/22, nestlings taken for food data.	Unknown	DeHaven unpublished field data
5/5/75	8,000-10,000 ind.	Along west side of Highway 99, about 0.75 mile north of Elk Grove exit.	Blackberries.	Size of colony approximately 0.25 acre. Found many completed nests and nests containing eggs on 5/6/75. Colony is evidently growing.	Unknown	DeHaven unpublished field data
5/12/75	15,000 ind.	Laguna Creek.	Blackberries.	Size of colony approximately 0.5 acre. Egg-laying stage of nesting in 2nd or 3rd day.	Unknown	DeHaven unpublished field data
5/12/75	10,000 ind.	Grant Line Road, 0.5 mile north east of Sheldon Road.	Blackberries.	Size of colony approximately 0.5 acre. Nesting activity just beginning.	Unknown	DeHaven unpublished field data
5/15/75	8,000-10,000 ind.	One-half mile east-northeast of Herald.	Blackberries.	Size of colony approximately 0.25 mile. Adults singing. On 6/5, 6/8, and 6/11, nestlings taken for data.	Unknown	DeHaven unpublished field data
6/1/75	5,000 ind.	North side of Twin Cities Road, 1 mile east of the junction of Highway 99.	Blackberries on edge of tule/ bulrush marsh; no water.	Size of colony approximately 0.25 acre. Latter stage of nest building activity.	Unknown	DeHaven unpublished field data

Table I-22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/14/77	800 ind.	Galt (2.5 - 2.75 miles north by east to north-northeast). East side of Morengo Road, about 2 miles west of Herald.	Dense blackberry with bits of marsh and individual willow shrubs in a swale.	Observed flock foraging in irrigated pasture. Nesting verified.	Unknown	Cogswell pers. comm.
<u>1980-1989</u>						
1980	Small colony	Hauschildt Road, approximately 0.75 mile northeast junction Twin Cities-McKenzie Roads, northeast of Galt. (Galt T5N R6E S11)	Data not available.	Small colony observed in 1980 but abandoned same year. Farmer may have baited with poisoned rice. Cowbird parasitism noticed here.	Unknown	Hosea 1986
5/2/80	20 ind.	Near the intersection of Highway 104 and Hauschildt Road.	Blackberries.	Size of colony approximately 0.20 acre. Incubation observed.	Unknown	Hosea 1986
5/26/80	160 ind.	Near U.S. 50 at White Rock Road and Zinfandel.	Thistles.	Size of colony approximately 0.75 acre. Observed fledglings.	Unknown	Hosea 1986
1981	3,000 ind.	Just north of Florin Road, 0.5 mile west of Eagle's Nest Road, approximately 2.5 miles north-east of Elk Grove.	Data not available.		Unknown	Hosea 1986 (data from Matus)
4/15/81	1,330 ind.	Old Placerville Road (now called East Bidwell Road).	Blackberries.	Size of colony approximately 0.75 acre. Observed incubation.	Unknown	Hosea 1986
4/16/81	Several hundred ind.	Tavernor Road and Folsom South Canal.	Blackberries.	Observed young.	Unknown	Hosea 1986 (data from DeHaven)

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/29/81	120 ind.	Near Morengo Road, approximately 2 miles north-northeast of Galt. (Galt T5N R6E S14)	Blackberries and cattails.	Size of colony approximately 0.20 acre. Probable breeding colony.	Unknown	Hosea 1986
5/2/81	2,635 ind.	Highway 104, Rancho Seco.	Wild rose.	Observed egg laying.	Unknown	Hosea 1986
5/11/81	320 ind.	Calvine Road and railroad tracks, southeast of Sacramento. (Florin T7N R5E S27 SW/SE)	Blackberries.	Size of colony approximately 0.20 acre. Probable breeding colony.	Unknown	Hosea 1986
5/11/81	50 ind.	Calvine Road and Highway 99. (Florin T7N R5E S14 SW/SW)	Blackberries and cattails.	Size of colony approximately 0.20 acre. Fledglings observed.	Unknown	Hosea 1986
5/15/81	1,000 ind.	North of Mingo Road, 1 mile north-west of McKenzie Road-Twin Cities Road. (Galt T5N R6E S3)	Blackberries and bulrush.	Size of colony approximately 0.50 acre. Young observed.	Unknown	Hosea 1986
5/15/81	100 ind.	Near intersection of Kamerer Road and Bruceville Road, 4 miles north of Franklin Field. (Bruceville T6N R5E S15)	Blackberries.	Size of colony approximately 0.25 acre. Probable breeding colony.	Unknown	Hosea 1986
6/21/81	300 ind.	North side of Highway 104 and Highway 99, approximately 2 miles north of Galt. (Galt T5N R6E S10)	Cattails.	Size of colony approximately 0.30 acre. Fledglings observed.	Unknown	Hosea 1986

Appendix I-22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/21/81	60 ind.	McKenzie Road (0.3 mile south of Mingo Road, approximately 2.5 miles north of Galt). (Galt T5N R6E S11)	Blackberries.	Size of colony less than 0.20 acre. Probable breeding colony.	Unknown	Hosea 1986
5/4/82	75 to 180 ind.	West Scott Road.	Blackberries.	Incubation observed.	Unknown	Hosea 1986
5/5/82	825 to 880 ind.	South West Scott Road.	Blackberries.	Nestlings observed.	Unknown	Hosea 1986
5/5/82	90 to 160 ind.	Scott Road.	Blackberries.	Incubation observed.	Unknown	Hosea 1986
6/5/82	235 to 270 ind.	White Rock Road and Folsom South Canal, 1.5 miles northeast of Mather Field. (Carmichael T9N R6E S36)	Thistles.	Fledglings observed. Colony had been at this site many years, but area was leveled and disced for development into a business park.	Extirpated	Hosea 1986
6/7/82	130 ind.	Along Sheldon Road, 0.5 mile east of Highway 99. (Florin T7N R5E S26 N/NE)	Cattails along culvert.	Nesting observed. Nesting stage unknown.	Unknown	Hosea 1986
6/7/82	2,300 to 2,800 ind.	Herald. (Clay T5N R7E S7 NE/SE)	Cattails.	Nestlings observed.	Unknown	Hosea 1986
6/7/82	2,500 to 3,000 ind.	Highway 104 near Rancho Seco. (Clay T6N R8E S30)	Ponds in pasture and wildrose.	Tricoloreds nested in two of three sites each year. Two sites are ponds in pasture, third is along row of wildrose under powerlines.	Unknown	Hosea 1986

Table I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/9/82	1,700 to 1,780 ind.	Laguna Creek, approximately 1.5 miles north-northwest of Junction 104 and Clay Station Road. (Clay T6N R7E S23)	Willows.	Incubation observed.	Unknown	Hosea 1986
6/9/82	6,280 to 6,630 ind.	Clay Station Road, near Twin Cities. Pond west of road approximately 1.25 miles north of junction with Highway 104. (Clay T6N R7E S23 SE)	Cattail pond.	Egg laying observed. On 7/21 visit, almost every nest was full of dead young; unknown cause, possibly due to herbicide/ pesticide spraying.	Unknown	Hosea 1986
7/18/82	200-300 ind.	Scott Road, Sacramento.	Brambles.	Nesting observed.	Unknown	American Bird file data
4/26/86	Hundreds of prs.	Florin Road just east of intersection of Eagles Nest Road.	Cattail marsh.	Size of colony approximately 9 acres. Unknown if colony fledged young.	Unknown	Manolis pers. comm.
4/6/87	500+ ind.	Near Florin ponds.	Data not available.	Nesting colony.	Unknown	American Bird file data
4/13/87-5/30/87 & 4/16/88-5/17/88 & 4/11/89, 5/5/89, 5/21/89, & 5/23/91	10,000 ind.	Natomas Ditch, approximately 2 miles south of Folsom on East Bidwell Road. (Folsom T9N R8E S5 SE)	Blackberry brambles along ditch and in west pastures.	Size of colony approximately 2 to 3 acres (linear patches). This is the largest and possibly the most productive colony in Sacramento County. Large numbers of young fledged every year. Similar nesting dates all three years. The area is threatened by construction of the Folsom Lake Community College. The Natomas Ditch, water source for this colony, was drained during 1990 and the colony was reduced to about 2,000 adults during the 1991 nesting season (Holl pers. comm.).	Partially extirpated; some nesting in near remaining wetlands	Beedy and Hayworth (in press)

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/2/87	1-200 prs.	Stonehouse Road near Rancho Murieta sewage plant.	Grassy hillsides.	Size of colony not known (colony located over hill on unseen location). Adults observed foraging and carrying food to unseen site. Unknown if colony fledged young.	Unknown	Manolis pers. comm.
5/2/87	1-200 prs.	Scott Road, approximately 1-2 miles north of Deer Creek Crossing (marsh on east side of road).	Cattail marsh.	Size of colony approximately 1-2 acres. Adults observed carrying food to colony. Unknown if colony fledged young.	Unknown	Manolis pers. comm.
5/26/87, 6/16/87, & 6/26/87	200 prs.	East side of Highway 5, 0.35 mile north of Hood Franklin exit. Bridge sign reads: "Middle Reach Stone Lake" (BR24-345).	Cattail/willow marsh with adjacent grasslands. Cattails: 50' x 75'; Willows: 15-20' high	On 6/16/87, observed adults carrying food to another possible breeding site. Successful nesting indicated by observation of fledged young on 6/26/87. No tricolored blackbirds seen during 1988. Various sightings between 3/30/89-4/28/89; no nesting observed. Disturbance to colony is proximity of Highway 5; cars frequently stop at this spot.	Extant	Myers pers. comm.
April-June 1988	750-1,000 prs.	Surrounding pasture/marsh lands near Clay.	Blackberry brambles around ponds and bordering grassy/marshy pastures.	Size of colony difficult to judge; nesting birds scattered over approximately 1 square mile. Nesting "clumped" in little colonies in patches of blackberry thickets; largest concentration of 250 pairs, but probably 750-1,000 pairs in entire area. Adults observed feeding young out of nests. Successful nesting indicated by observation of fledged young. No visible threats or disturbances observed.	Unknown	Manolis pers. comm.

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/16/89	50-75 ind.	North Stone Lake at western edge where borrow channel "meets" the lake (i.e., opposite triangle on lake side). (Clarksburg T6N R4E S11 Ne)	Blackberry thicket at interface of borrow channel, uplands, bulrush marsh, and lake.	Successful nesting indicated by observation of fledged young. Visible threat to colony may be cattle grazing.	Extant	Scammell-Tinling pers. comm.
4/22/89 & 5/20/89	250 ind.	Southwest of access road to reservoir in Rancho Seco Park. (Goose Creek T6N R8E S33 NE)	Open grass with areas of shrubs, vines, and a few eucalyptus trees. Creek meandering through area.	Size of colony approximately 1 acre. Observed adults carrying food on 5/20. Successful nesting indicated by observation of fledged young. No visible threats or disturbances observed. Also observed tricolored blackbirds at a potential nesting area during 1988 breeding season near Teichert settling ponds located between Jackson Road and Kiefer Boulevard, just west of Watt Avenue.	Extant	Munson pers. comm.
5/20/89	Several hundred	Southeast of Grant Line Road, approximately 0.5 mile south of intersection of Bond Road.	Pasture land, cultivated fields with blackberry hedges.	Size of colony approximately 0.5 acre. Observed adults carrying food to colony. Unknown if colony fledged young.	Extant	Manolis pers. comm.
5/20/89	100-200 ind.	North of Highway 104 (and the railroad tracks), approximately 0.4 mile northeast of Clay.	Blackberry hedge along marshy creek.	Size of colony approximately 0.25 acre. Observed adults carrying food to young. Unknown if colony fledged young. Potential disturbance to colony may be proximity of road to the site.	Extant	Manolis pers. comm.

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/20/89	500 ind.	Skunk Creek southeast of Highway 104, 0.5 mile east of Herald.	Pastureland, hay crops, and blackberry hedges.	Observed adults carrying food to young. Unknown if colony fledged young. No visible disturbances observed.	Extant	Manolis pers. comm.
5/21/89	150 prs.	Along creek drainage just east of railroad tracks across Florin Road approximately 1.5 miles east of intersection of Elk Grove-Florin Road.	Blackberry hedge on edge of marshy creek.	Size of colony approximately 0.25 acre. Observed adults carrying food to colony; successful nesting indicated by observation of fledged young. Potential disturbance to colony may be proximity of road to site.	Extant	Manolis pers. comm.
5/21/89	1,000-3,000 ind.	Laguna Creek drainage approximately 0.5 mile west of Eagles Nest Road (visible, but distant from road).	Pastureland, alfalfa fields, and blackberry hedges.	Size of colony approximately 2-3 acres. Observed adults carrying food to colony. Unknown if colony fledged young.	Extant	Manolis pers. comm.
5/24-25/89	1,000 ind.	One quarter mile west of Eagle's Nest Road.	Blackberry thicket.	Size of colony approximately 0.25 acre. Observed adults carrying food to nests. Colony successfully fledged young. No present disturbance to colony, but landowners may alter use of land in the future.	Extant	Johnson pers. comm.
5/20/89 and 5/27/89	150 prs.	On Latrobe Road about 1 mile west of Scott Road and 2.25 miles north of Highway 16. Crevis Creek runs along the road just east of a farmhouse. Colony is located about 50 yards from the road on the north bank of the creek.	Blackberry patch along the creek. Area is generally grassland pasture.	Size of colony approximately 180 feet long by 20 feet wide. Observed adults carrying food to young on 5/20 and 5/27. By 6/10, no tricoloreds seen.	Extant	Mohr pers. comm.

Table I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/4/89	150 prs.	Gravel company site located on the west side of Folsom-South Canal, south of the intersection of Kilgore and International Roads, Rancho Cordova.	Riparian area (cottonwood trees present).	Tricoloreds seen carrying food. Unknown if colony fledged young. Colony is threatened by its location to gravel site.	Extant	Johnson pers. comm.
1990						
4/8/90	300+ prs.	Scott Road, about 0.25 mile south of Coyote Creek crossing.	Cattail/tule marsh.	Size of colony approximately 0.5 acre. Tricoloreds observed building nests. Revisited site in June and sighted about 1,000 birds. Evidence of possible second nesting attempt.	Extant	Mohr pers. comm.
4/17/90	80-100 prs.	Along Southern Pacific Railroad tracks south of Calvine Road.	Blackberry hedgerow adjacent to grassy pastureland.	Size of colony approximately 0.5 acre. Observed both males and females carrying food to small (?) young on nests (not visible). Encroaching housing development north of Calvine Road may cause future disturbance to colony. Unknown if colony fledged young.	Extant	Manolis and Magney pers. comms.
4/21/90	3,000-4,000 ind.	California Traction railroad tracks along Colony Road between Woods and Walmort Roads.	Blackberries and cattails along fence roads, creek, and ditch margins. Pastureland and low-density residential areas adjacent to site.	Size of colony approximately 2-3 acres. Possible nesting area, but not confirmed. Revisited area near site on 5/28; a few tricoloreds seen.	Extant	Manolis pers. comm.

Appendix I–22. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/30/90	200-250 prs.	Northeastern portion of Russell Ranch, east of Folsom. (Clarksville T10N R8E S28 SW)	Blackberry thicket surrounded by nonnative grassland (heavily grazed) adjacent to remnant valley freshwater marsh and great valley cottonwood riparian forest (along Natomas Ditch).	Size of colony approximately 2 acres. Colony successfully nested; fledging occurred between 5/18/90 and 5/24/90. Threats to colony include urban development and loss of hydrology which currently maintains the wetland vegetation.	Extant	Bumgardner pers. comm.
5/9-20/90	1,000 prs.	Knox Road north of Florin Road.	Blackberry brambles on east and west side of road.	Size of colony approximately 0.25 acre. On May 9, observed nest with three eggs and two newly hatched young. Revisited site on May 20; colony successfully fledged young although several hundred naked, dead young were found on the road.	Extant	Johnson pers. comm.
5/12/90	80-100 prs.	Calvine Road just north of intersection of Badger Road.	Blackberry thickets adjacent to pastureland.	Size of colony approximately 1-2 acres. Adults seen carrying food to either nestlings or fledglings (did not confirm) in hedge.	Extant	Manolis pers. comm.
5/12/90	150-200 prs.	South of Kiefer Boulevard, north of Deer Creek.	Blackberry brambles (two locations 100 yards apart).	Size of colony approximately 0.25 acre. Unknown if colony fledged young. Colony is located on private property and is undisturbed at this time.	Extant	Johnson pers. comm.
5/28/90	25-50 prs.	North fork of Badger Creek where it crosses Davis Road, just north of Walmort Road.	Blackberries and cattails along fence roads, creek, and ditch margins. Pastureland and low-density residential areas adjacent to site.	Size of colony approximately 1-2 acres. Adults seen feeding recently fledged young and carrying food into blackberry thickets.	Extant	Manolis pers. comm.

Appendix I–23. Tricolored Blackbird Nesting Observations in San Benito County

DATE OF OBSER-ATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
3/5/87	5+ ind.	San Felipe Lake.	Data not available.	Singing males on territory at small pond.	Unknown	American Birds file data
4/14/87	2,000 ind.	San Felipe Lake.	Data not available.	Unknown if this was a breeding colony. No confirmed breeding records for the county.	Unknown	Van Vuren pers. comm.

Appendix I–24. Tricolored Blackbird Nesting Observations in San Bernardino County

DATE OF OBSER-VATION	UMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
5/16/83	Data not available	Bernardino River.	Data not available.	Breeding colony found on 5/16. By 5/25, all eggs hatched with four birds in each nest. Young seemed to be approximately the same age.	Presumed extirpated	Belding 1890 (data from Blaisdell)
No date given	Data not available	San Bernardino.	Data not available.	Generally found breeding in the county.	Presumed extirpated	Belding 1890 (data from Blaisdell)
1920-1959						
5/22-23/43	2,000+ ind.	Los Serranos Country Club, 3 miles south by west of Chino.	Pond with tules.	Majority of birds had young (possibly all) recently out of nests. Some young flew with adults while others remained in the marsh and begged for food.	Presumed extirpated	Cogswell pers. comm.
		Rancho Don Lugo (formerly Los Serranos Country Club--see above).		On 7/4/46, hundreds of tricoloreds observed. Birds apparently persisted even though most of the tules were burned in March 1946. Calls of some young were heard in the remaining marsh remnant.		
		Rancho Cielito (formerly Rancho Don Lugo--see above).		On 4/25/51, observed large colony. Large flocks of adults carrying food toward pond on 4/28/51.		
				Site visited on 3/28/52; no tricoloreds present.		

Appendix I–24. Continued

DATE OF OBSER-VATION	UMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/2/46	500-700 prs.	Mill Creek Marsh, northeast part of Prado Basin (southeast of Chino).	Marsh.	Adults observed feeding fledglings. The main marsh (former Chino Gun Club) was doomed by lack of maintenance of the small dam after the flood control basin dam on the Santa Ana River was built (post World War II), but was still a marsh at this date. The dam broke and much of the marsh dried up.	Presumed extirpated	Cogswell pers. comm.
4/23/50	300 ind.	Loma Linda (0.8 miles west).	Tule pond (8 acre pond with 100 foot marsh border).	Observed nesting; small flocks carrying insects into tules and coming out empty-billed (young inferred but not seen).	Presumed extirpated	Cogswell pers. comm.
4/29/50	200 ind.	Loma Linda (1 mile west).	Tule pond.		Presumed extirpated	Cogswell pers. comm.
5/4/52	500+ ind.	Mill Creek Valley, northeast part of Prado Basin.	Nettles	Colony observed building nests in nettles over shallow water (former marsh area). Water probably dried up by June. Flocks flew more than 0.5 mile to green grain field to the northwest.	Presumed extirpated	Cogswell pers. comm.

Appendix I–25. Tricolored Blackbird Nesting Observations in San Diego County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
5/4/90	Data not available	Near Lakeside.	Data not available	Collected sets of eggs at this location.	Presumed extirpated	Bendire 1895
1900-1919						
Prior to 1906	Data not available	Escondido and San Pasqual Valleys and Bernardo Rancho.	Data not available	Observations of tricolored nesting colonies are from a district list compiled from 16 years of field notes. Apparently several colonies recorded. Earliest and latest nesting dates noted are from 4/30 to 5/26.	Presumed extirpated	Sharp 1907
1920-1949						
5/18/32	200 nests	Lakeside Lake.	Tules around lake.		Presumed extirpated	Neff 1937
5/19/32	1,000 nests	One mile west of San Luis Rey.	Tules around lake.		Presumed extirpated	Neff 1937
5/27/32	200 nests	San Dieguito Reservoir.	Tules/cattails around reservoir.		Presumed extirpated	Neff 1937
	1,200 nests	Two miles NE of San Luis Rey.	Tules/cattails around estuary.		Presumed extirpated	Neff 1937
1933	Large number	Lakeside.	Data not available.	Nesting colony found.	Presumed extirpated	Willett 1933 (data from Huey and Dixon)
5/12/35	100 nests	Near San Clemente.	Cattails around swamp.		Presumed extirpated	Neff 1937
5/15/36	1,000 nests	Near San Pasqual.	Cattail marsh.		Presumed extirpated	Neff 1937

Appendix I-25. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/16/36	750 nests	East edge of Chula Vista.	Cattails around reservoir.		Presumed extirpated	Neff 1937
5/17/36	500 nests	Near San Luis Rey.	Cattails around reservoir.		Presumed extirpated	Neff 1937
1970-1979						
4/26/71	2,500 ind. 10-20 nests	1-1/2 miles south of Fallbrook.	Pond with cattail and bulrush surrounded by nonirrigated grass-land in orange and avocado orchards.	Size of colony approximately 2/5 of an acre. Just beginning to build nests; found two completed nests and several incompleted nests.	Unknown	DeHaven unpublished field data
5/26/71	1,500 ind. 700 nests	Approximately 5 miles west of Lakeside, east side of Santee.	Gravel pit with cattail, bulrush, and willow surrounded by nonirri-gated grassland in small valley.	Size of colony approximately 0.75 acre. Part of the colony has already fledged and the rest is either in egg or nestling stage. Highly unsynchronous nesting. Birds have been nesting in this area since 1967 according to gravel pit owner.	Unknown	DeHaven unpublished field data
3/18/78	75 ind.	Jacumba.	Data not available.	Observed birds carrying nest material. Site visited again on 4/26/87. Adults seen feeding young in colony.	Extant	McCaskie pers. comm. and Unitt pers. comm.
5/19/78	250 ind.	Tijuana River Valley (Dairy Mart Road ponds).	Data not available.	Observed birds carrying food in nesting colony. The species nests irregularly at this location, including a colony of 40 adults feeding young on 4/26/87.	Probably extant	Unitt pers. comm.

Appendix I–25. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989				In the 1980s, irregular nesting has occurred in the Tijuana River Valley at the Dairy Mart ponds, and also probably somewhere along the lower Otay River, the San Diego River near Old Mission Dam, Santee Lakes, and possibly along the San Luis Rey River (including Whalen and Guajome Lakes). Jacumba, the easternmost colony, is probably used every year. Overall, tricolors remain locally common and depend on a few colony sites,the locations of which are obscure.		Unitt pers. comm.

Appendix I–26. Tricolored Blackbird Nesting Observations in San Joaquin County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
5/10/79	"Immense colony"	Central California (near Stockton).	Tules.	Many nests found and each nest averaged about one to each square yard. Approximately 100 nests were examined and the greatest number of eggs or young birds in any one nest was three. Several nests held only one egg or young bird and several young were dead. The colony was not thriving.	Presumed extirpated	Belding 1890
1900-1919						
5/7/19	25 prs.	Two miles southwest of La Grange.	Cattails in dredger pits.	Breeding colony found.	Presumed extirpated	Grinnell and Storer 1924
1920-1949						
5/17/35	150 nests	Near Escalon.	Cattail marsh.		Presumed extirpated	Neff 1937
6/3/36	100 nests	Near Lodi.	Cattails along canal.		Presumed extirpated	Neff 1937
	750 nests	Near Tracy.	Cattails along slough.		Presumed extirpated	Neff 1937
	2,500 nests	East of Tracy.	Cattails and willows along railway slough.		Presumed extirpated	Neff 1937
	500 nests	South of Manteca.	Cattails along canal		Presumed extirpated	Neff 1937
1960-1969						
5/19/65 & 5/17/66	Several hundred ind.	Durham Ferry Road, about 1 mile west of San Joaquin River.	Small marsh in an agricultural drainwater pond south of the road.	Observed tricoloreds flying to and from marsh, apparently feeding young. Some adult males still singing.	Unknown	Cogswell pers. comm.

Appendix I-26. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				On 5/17/66 visit, several hundred adults flying to and from nesting colony in cattails. On 4/30/67 visit, no tricoloreds seen.		
5/18/68	300 ind.	Just west of San Joaquin City, west of the river.	Cattail marsh.	Observed adults flying to and from nesting colony in marsh. Located in same agricultural drain as Durham Ferry site, but farther northeast, clost to Kasson Road.	Unknown	Cogswell pers. comm.
<u>1970-1979</u>						
5/5/71	Data not available	Between Tracy and Manteca, 1 mile west of Airport Way. (0.25 mile west of the junction of Highway 120 and Swanson Road.)	Giant cane taller than the colony. No water present.	Size of colony approximately 0.25 acre. Noted young fledging on 5/9/71. Revisited site on 5/25/72. Saw 25-50 tricoloreds; probably already fledged and left the colony. Noted one adult feeding young. Revisited site on 6/5/74. Noted about 500 tricoloreds. Young have already fledged but some fresh clutches found.	Unknown	DeHaven unpublished field data
5/26/72	5,000 ind.	San Joaquin River; 0.75 mile southeast of junction of San Joaquin River and Road J-9.	Cattail and bulrush marsh; dry but water was present earlier.	Size of colony approximately 0.75 acre. Observed young fledglings in tules.	Unknown	DeHaven unpublished field data

Appendix I–26. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/72	25-50 ind.	Along Highway 120, 5 miles west of Manteca.	Giant cane.	Colony of 25-50 in giant cane; post fledging.	Unknown	Natural Diversity Data Base (data from Neff)
6/5/74	500+ ind.	Along Highway 120, 5 miles west of Manteca.	Giant cane.	Colony of 500+ nesting in giant cane in June 1974; post fledging and new clutches.	Unknown	DeHaven unpublished field data
1980-1989						
4/25/89	200-400 ind.	At intersection of Messick Road and Clements Road on unnamed tributary where the Calaveras River crosses Clements Road. (Linden T2N R8E S2 SW)	Blackberry thickets located on both sides of Clements Road.	Presumed breeding site. Observed adult birds foraging in pasture and returning to blackberry thickets.	Extant	Gifford pers. comm.

Appendix I–27. Tricolored Blackbird Nesting Observations in San Luis Opisbo County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1960-1969						
5/6/67	Data not available	Near Los Osos.	Freshwater marsh.	Nest found with eggs. Unknown if colony fledged young.	Unknown	Cornell University, Laboratory of Ornithology (data from Penhale)
1970-1979						
1973, 1974, & 1975	Less than 50 nests; several hundred ind.	Goleta Slough, adjacent to U. C. Santa Barbara.	Freshwater marsh.	Information not available.	Unknown	Rothstein per. comm. (letter to DeHaven) Rothstein per. comm. (letter to DeHaven)
1974 & 1975	100-1,000 prs.	Estrella Creek at Whitney Gardens.	Data not available.	Observed nesting activity.	Unknown	Rothstein per. comm. (letter to DeHaven)
1975	Data not available	One mile south of Shandon.	Data not available.	Small number of tricoloreds observed nesting among redwings.	Unknown	Rothstein per. comm. (letter to DeHaven)
June 1975	Data not available	Several miles south of Atascadero.	Data not available.	Observed tricoloreds bringing food to a large colony.	Unknown	Rothstein per. comm. (letter to DeHaven)
1980-1989						
Summer 1987	50 prs.	Seasonal water pond at Villa Creek, 3 miles north of Cayucos on Highway 1.	Tules.	Size of colony approximately 1 acre. Colony successfully fledged young.	Unknown	Edell pers. comm.

Appendix I–27. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/16/88-7/8/88	100-125 prs.	California Men's Colony sewage evaporation pond located 0.25 mile north of Cuesta College, on the west side of Highway 1, 5 miles north of San Luis Obispo.	Sewage evaporation pond with cattle grazed and agricultural crop field around. Tules growing at two locations on pond.	Size of colony approximately 0.1 acre. Unknown if colony fledged young.	Unknown	Edell pers. comm.
5/20/89	30 prs.	Highway 46, 5 miles east of Highway 1.	Permanent pond with small patches of tules, grazed grasslands, and steep hillside with mustard.	Size of colony approximately 1 acre. Colony was probably successful in fledging young; female observed carrying food. Stock pond located near colony may disturb the site.	Extant	Edell pers. comm.

Appendix I–28. Tricolored Blackbird Nesting Observations in San Mateo County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1970-1979						
Early 1970's	Data not available	Along Highway 1 at the junction of Miramontes Road at the south city limit of Half Moon Bay.	Data not available.	Colony also existed in late 1960's.	Presumed extirpated	Metropulos pers. comm. (Data from Sauppe)
6/2/79	Data not available	Along Verde Road just south of Half Moon Bay.	Cattails.	Observed female carrying nest material to cattails.	Presumed extirpated	American Birds file data (Data from Sauppe)
				As of 1989, no active breeding colonies in the county.		Metropulos pers. comm.

Appendix I–29. Tricolored Blackbird Nesting Observations in Santa Barbara County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/18/36	3,000 nests	Near Los Alamos.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
1970-1979						
4/27/71	1,000+ ind.	Along north side of Highway 101, 6-7 miles west of Santa Barbara.	Ponds with cattail and bulrush surrounded by nonirrigated grass-lands. Water 2-5 feet deep.	Three locations within 1.5 mile radius. Size of colonies: 3/4, 1/10, and ? of an acre. Successful nesting indicated by observation of fledged young.	Unknown	DeHaven unpublished field data
1973-1975	50 prs.	Goleta Slough, adjacent to the University of California, Santa Barbara.	Data not available.	Information not available.	Unknown	Rothstein pers. comm. (Letter to DeHaven)
1975?	Several hundred prs.	Lake Los Caneros, Goleta.	Data not available.	Probably a nesting site.	Unknown	Rothstein pers. comm. (Letter to DeHaven)
July 1979	1,200+ ind.	Cuyama Valley; arid valley with irrigated agriculture.	Nesting observed at ranch ponds.	Unknown if colony fledged young.	Unknown	Lehman pers. comm.
Late 1970's	200 ind.	Marsh located across the street from the Santa Barbara Airport.	Small marsh.	No longer breeding at this location, but still observe 25-50 adults with fledged young over Goleta golf course in late summer.	Extirpated.	Lehman pers. comm.

Appendix I–29. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
	Hundreds of ind.	Union sugar wastewater settling ponds located just west of Santa Maria.	Data not available.	Sporadic breeding during the last 10+ years at this location.	Unknown	Lehman pers. comm.
1983	Less than 100 ind.	Near the City of Goleta.	Vernal pools adjacent to sewage treatment plant.	Former nest site. Sewer ponds were filled with sludge 6 years ago.	Extirpated, habitat eliminated	Dunn pers. comm.
				A large colony was found along the Santa Ynez River during the 1980s, but the exact location is not available. Tricolors may also breed at several lakes on Vandenberg Air Force Base. Overall, the species is declining in Santa Barbara County.		Lehman pers. comm.

Appendix I–30. Tricolored Blackbird Nesting Observations in Santa Clara County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
5/26/95	Data not available	Near Sargent.	Tule patch.	A small breeding colony found. Nests were just completed and were approximately 5 feet above the water.	Presumed extirpated	Barlow 1900
1980-1989						
3/30/83	5 ind.	Halls Valley.	Data not available.	Breeding colony in 1982; approximately 20 birds present. Site visited again on 4/25/87; 100-200 birds observed. Site is apparently used for nesting each year.	Unknown	American Birds file data
5/26/83	30+ ind.	Coyote percolation ponds.	Data not available.	Breeding colony; birds observed carrying nest material. Site visited again on 4/23/85; 40 individuals observed.	Unknown	American Birds file data
6/3/84	20+ ind.	Arroyo Bayo, east side of Mt. Hamilton.	Data not available.	Probable breeding colony. Number of birds estimated by sound and occasional flying birds.	Unknown	American Birds file data
4/15/89	1,150 ind.	Sargent Creek, 1.45 miles north of the confluence of the Pajaro River and the San Benito River. (Chittenden T12S R4E)	Tule marsh with approximately 30 percent open water; stock pond surrounded by grasslands.	Size of colony approximately 50 m x 20 m. Observed females carrying nest material into tules and males displaying. Unknown if colony fledged young. No visible threats or disturbances to colony observed.	Extant	Suddjian pers. comm.
4/15/89	350 ind.	Sargent Creek, 1.25 miles north of the confluence of the Pajaro River and the San Benito River. (Chittenden T12S R4E)	Cattail marsh with a few willows surrounded by grasslands; no open water.	Size of colony approximately 40 m x 20 m. Observed females carrying nest material into tules and males displaying. Unknown if colony fledged young. No visible threats or disturbances to colony observed.	Extant	Suddjian pers. comm.

Appendix I–30. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
4/21-30/89	600 ind.	Base of Calero Reservoir Dam, northwest corner of reservoir; south of San Jose (elevation 400 feet). (Santa Teresa Hills T9S R2E)	Tule/cattail marsh adjacent to sycamore riparian, grasslands, and disturbed ruderal habitat.	Observed females carrying nest material into marsh and males displaying on 4/21/89. On 4/28/89, approximately 20 females evident with no males present. No tri-colored blackbirds present on 4/30/89; colony presumed abandoned. Observed a few red-winged blackbirds moved into area previously occupied by tricoloreds. Potential disturbances from maintenance work at adjacent dam. Potential future disturbances may be caused by construction of a pipeline at the north end of the marsh.	Colony extirpated; habitat extant	Suddjian pers. comm.

Appendix I–31. Tricolored Blackbird Nesting Observations in Santa Cruz County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
1884	Data not available	Within Santa Cruz County.	Data not available.	Nests with eggs found. Species is common throughout the county.	Unknown	Skirm 1884
1900-1949						
4/30/32	500 nests	Five miles west of Watsonville.	Blackberries/nettles/cattails along dry marsh.		Presumed extirpated	Neff 1937
1970-1979						
4/25/73-5/2/73	60+ prs.	Neary's Lagoon located near Bay Street and California Street in the City of Santa Cruz.	Extensive cattail marsh with nearby willows, cottonwoods, grassland, lawn, and development in surrounding area.	Found 37 nests on 4/25/73. Colony found destroyed and abandoned on 5/2 visit. Tricoloreds reportedly "vigorously hassled by red-winged blackbirds when attemping to enter marsh."	Unknown	Suddjian pers. comm. (Data from Greenberg and Shilt)
				Possible nesting at this site in 1975 and 1977, but no details available.	Unknown	Suddjian pers. comm. (Data from Morgan)
6/15/75, 7/2/75, 5/14/76, & 6/12/76	Hundreds of ind.	Scott Creek Marsh at the creek mouth.	Tule and cattail marsh surrounded by agricultural fields, riparian and sandy beach; former peat ponds.	Colony was not successful in fledging young during 1976 breeding season; marsh was drained in late May. Successful nesting indicated by observation of fledged young on 7/2/75 visit.	Unknown	Suddjian pers. comm. (Data from Morgan)

Appendix I-31. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
7/7/80	100 ind.	West Struve Slough.	Tule marsh in seasonal wetland surrounded by weedy fields.	Nesting activity reported but unknown if colony fledged young.	Unknown	Suddjian pers. comm. (Data from Busch)
6/10/87	30 ind. (all males)	North end of Antonelli Pond, Santa Cruz; 0.3 mile southwest of junction of Highway 1 and Western Drive.	Permanent pond with cattail marsh and willows adjacent to agri-cultural and ruderal fields, and development.	Only one female seen on 5/25/88. One nest observed on 6/10/88, but no nesting activity apparent this season.	Unknown	Suddjian pers. comm. (Data from Morgan)
5/8/87 & 6/15/87	300 ind.	Last Chance Pond. South end of Last Chance Road near north end of Swanton Road; 0.55 mile east-northeast of northern junction of Highway 1 and Swanton Road.	Permanent pond in grasslands surrounded by native monterey pine forest. Pond filled with tules and smartweed.	Observed nesting activity on 5/8 and adults carrying food to nestlings on 6/15. Colony presumed to have fledged young based on numerous nestlings seen. The only threat to colony is possibility of pond drying up in severe drought years.	Unknown	Suddjian pers. comm.
6/15/87	40+ ind.	Harkins Slough.	Data not available.	Observed foraging; known to nest at nearby Struve Slough in past years (see 7/7/80 entry).	Unknown	Campbell pers. comm. (American Birds file, data from Suddjian)
4/21/88 & 6/5/88	150 prs.	Last Chance Pond; 0.55 mile east-northeast of northern junction of Highway 1 and Swanton Road.	Tule marsh at perennial pond surrounded by grasslands and native monterey pine forest (elevation: 580 feet).	Observed nesting activity on 4/21/88 and adults carrying food to nests on 6/5/88. Unknown if colony fledged young. No visible threats or disturbances to colony noted.	Unknown	Suddjian pers. comm. (Data from Kempf)

Appendix I-31. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
2/12/88 & 4/15/88-6/20/88	750 ind.	East side of Hanson Slough; 1.1 miles northwest of junction of Highway 1 and Highway 129, west of Watsonville.	Seasonal wetlands with the lower portion of the slough consisting of cattail, smartweed, willow, cocklebur, and poison hemlock. Upland slopes of the slough are a mix of California black-berry, poison hemlock, and annual grasses. The surrounding area consists of agricultural fields, an orchard, cattle grazing, and additional seasonal wetlands.	Observed males singing on 2/12, 4/15, and 4/22; females carrying nest material on 5/2; adults feeding fledged young on 6/5 and 6/20. All nests were in two large adjacent blackberry brambles located at the base of the slope with a few in surrounding hemlock. No disturbances observed. Potential disturbances may include wandering dogs and future westward expansion of development in Watsonville. As of 4/30/89, this colony has been abandoned. No visible changes to the area were observed.	Colony extirpated Habitat extant	Suddjian pers. comm.

Appendix I–32. Tricolored Blackbird Nesting Observations in Shasta County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
Prior to 1853	Data not available	Cottonwood Creek (near Shasta City).	Thickets of alder and willow bushes located next to the creek.	Size of colony was several acres. Eggs had already hatched and young were present in nests. Wolves and foxes arrived nightly to devour young that had fallen from their nests during the day.	Presumed extirpated	A. L. Heerman (cited in Neff 1937)
1920-1949						
5/16/32	10,000 nests	One half mile south of Anderson.	Cattail/tule/sedge marsh.	Four nesting colonies located.	Presumed extirpated	Taylor and Neff (cited in Neff 1934)
5/18/32	5,000 nests	Five miles southeast of Anderson.	Cattails/tules along creek.		Presumed extirpated	Neff 1937
	2,000 nests	Five miles northeast of Cottonwood.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
6/14/32	1,000 nests	Six miles south of Redding.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
5/22/33	100 nests	One mile south of Glenburn.	Tangle of blackberry, rose, and plum, overhanging the high bank of Fall River.	Estimated about 60-70 nests in colony which contained two to three eggs.	Presumed extirpated	Olsen and Neff (cited in Neff 1934)
6/30/33	1,000 nests	Southeast of Anderson.	Cattails along creek.		Presumed extirpated	Neff 1937
1970-1979						
6/6/72	5,000 ind.	Four miles southwest of Anderson.	Data not available.	Did not find colony but presumed young in nests; adults observed carrying food into hills.	Unknown	DeHaven unpublished field data

Appendix I-32. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1980-1989						
6/8/80	1,000 pr.	Between MacArthur Swamp and Big Lake.	Data not available.	None	Unknown	American Birds file data
5/19/84 & 7/18/86	50+ ind.	Big Lake.	Data not available.	Possible breeding colony.	Unknown	American Birds file data
6/30/89	10-30 prs.	MacArthur Swamp - Rat Ranch Road Big Lake.	Cattails and tall grasses. Lake seepage to reeds.	Potential breeding colony; unknown if colony fledged young. Other potential breeding sites: Honey Lake, Tule, and Klamath Lakes. Glenburn - 4/1/89; 100 ind.	Extant	Yutzy pers. comm.

Appendix I–33. Tricolored Blackbird Nesting Observations in Siskiyou County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1970-1979						
6/10/71	1,000 ind. 750 nests	Two miles south of Tule Lake National Wildlife Refuge headquarters.	Nettles along bank.	Two stages of nesting: nests containing eggs and newly completed nests.	Unknown	DeHaven unpublished field data
6/10/71	15 ind.	Southeast corner of Tule Lake National Wildlife Refuge, adjacent to Lava Beds National Monument.	Nettles.	Flock of 15 nesting in nettles.	Unknown	Natural Diversity Data Base (data from DeHaven)

Appendix I–34. Tricolored Blackbird Nesting Observations in Solano County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/6/32	6 nests	Two miles west of Birds Landing.	Cattail marsh.		Presumed extirpated	Neff 1937
1980-1989						
4/18-26/81	200 ind.	One-half mile south of Stevenson's Bridge (over Putah Creek) to the east of Road 95A.	Small cattail marsh.	Birds gone after 2 weeks.	Habitat extant, but no nesting in recent years	American Birds file data
4/20/81	Data not available	Highway 113 at Calhoun Cut. (Dozier T5N R1E S25)	Cattails.	Size of colony approximately 0.25 acre. Nest building observed, but the site was abandoned.	Unknown	Hosea 1986 (Data from DeHaven)
4/8/83	170 ind.	Jepson Prairie.	Data not available.	Possible breeding, not continued. Possible nesting suggested by observations on two separate dates. Unknown if colony fledged young.	Unknown	Souza pers. comm (Data from Lovio)
5/87	6 males	Near parking lot of Lake Herman. (Benicia T3N R3W S24 NW)	Fresh water reservoir with many tules (cleaned up in 1988).	Size of reservoir approximately 160 acres. Probable nesting but unknown if colony fledged young. Possible disturbances included unleashed dogs and kids on motor bikes.	Presumed extant	Souza pers. comm.
4/23-24/88	40-50 inds.	Immediately east of Admiral Callahan Road, 0.6 mile north of Redwood Street in Vallejo. (Cordelia T3N R3W S5 SW)	Tall tules (2.5-3 m) and cattail (2-3 m). Small fresh water marsh on small creek.	Size of colony approximately 1 acre. Hatching occurred approximately 4/22/88; Successful nesting indicated by observation of fledged young on 5/31/88. (This site was first visited on 4/27/87; nest building observed but no fledged young).	Definitely extirpated; habitat extant	Lovio and Leong pers. comms. (additional data provided by Gross)

Appendix I–34. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				Return visit to same location on 3/11/89; no birds found. Disturbances include a shopping center, additional construction, the highway, a collection of garbage along the landward (north) side of the colony, and tule removal by Vallejo Public Works.		

Appendix I-35. Tricolored Blackbird Nesting Observations in Sonoma County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1960-1969						
5/11/66	100 prs.	Copeland Creek, located on edge of Sonoma State University campus, Rohnert Park.	Blackberry and willow.	Observed about 100 nests but no eggs found. Successful nesting indicated by observation of fledged young. Colony members flew about 0.75 mile to feed at a chicken farm.	Extirpated	Arnold pers. comm.
1970-1979						
4/27/71	300 ind.	Stony Point Road, 5 miles west of Cotati.	Blackberries.		Unknown	Norwitt pers. comm. (letter to Crase)
4/27/71	200 ind.	Roblar Road, 5 miles west of Cotati.	Blackberries.		Unknown	Norwitt pers. comm. (letter to Crase)
4/71	3,000 ind.	One mile east of Rohnert Park on Copeland Creek.	Blackberries, willows, thistles.		Unknown	Norwitt pers. comm. (letter to Crase)
4/71	Data not available	Willow Creek, a tributary of the Petaluma River.	Blackberries.		Unknown	Norwitt pers. comm. (letter to Crase)
Summer 1972	300 ind.	Southwest Sonoma County.	Data not available.	Small colony observed. Unknown if colony fledged young.	Unknown	American Birds data file
4/27/76	Data not available	Sonoma County airport.	Data not available.	Nesting observed. New location in county. Unknown if colony fledged young.	Unknown	American Birds data file
4/29/76 & 5/3/76	100 prs.	Copeland Creek, located on edge of Sonoma State University campus, Rohnert Park, CA.	Blackberry "jungle" on bank of Copeland Creek.	Several nests were completed. Unknown if colony fledged young.	Extirpated	Arnold pers. comm. and Winter pers. comm.

Appendix I–35. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
Late April 1976	500-700 ind.	Sebastopol.	Data not available.	Breeding colony. Unknown if colony fledged young.	Unknown	American Birds data file
6/13/77	Data not available	Americena Creek near Valley Ford.	Data not available.	Breeding colony located on Sonoma/Marin County line. Unknown if colony fledged young.	Unknown	American Birds data file

Appendix I–36. Tricolored Blackbird Nesting Observations in Stanislaus County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1900-1919						
4/14/14	Several thousand ind.	Rancho Dos Rios.	Tules.	Size of colony was several acres. On 4/14, nest building observed. On 4/23, nests were found containing two to four eggs. Visited site again on 4/29 and observed some newly hatched young; most nests still contained eggs. By 6/15, colony was greatly scattered and fledglings observed foraging with adults. Colony was beginning to disintegrate by 7/1.	Unknown	Malliard 1914
1920-1949						
5/14/32	2,500 nests	Three miles east of Patterson.	Tules along ditch.		Presumed extirpated	Neff 1937
	10,000 nests	Near Patterson colony (above).	Cattails/tules along ditch.		Presumed extirpated	Neff 1937
5/15/35	2,500 nests	West of Mt. View School.	Cattail marsh.		Presumed extirpated	Neff 1937
	5,000 nests	Near Jennings School.	Cattails along canal.		Presumed extirpated	Neff 1937
5/17/35	250 nests	East of Oakdale.	Cattails along slough.		Presumed extirpated	Neff 1937
5/20/35	750 nests	West of Crows Landing.	Cattails along canal.		Presumed extirpated	Neff 1937
6/4/36	7,500 nests	Near Oakdale.	Cattails along canal.		Presumed extirpated	Neff 1937
	500 nests	Near Oakdale.	Cattails along canal.		Presumed extirpated	Neff 1937
	500 nests	Near Oakdale.	Cattails around lake.		Presumed extirpated	Neff 1937
	200 nests	South of Oakdale.	Cattails along canal.		Presumed extirpated	Neff 1937
	1,000 nests	Near Roberts Ferry.	Cattail marsh and willows.		Presumed extirpated	Neff 1937
	3,000 nests	Near La Grange.	Cattails around dredger pits.		Presumed extirpated	Neff 1937

Appendix I–36. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
<u>1970-1979</u>						
4/28/71	1,250 ind. 500-700 nests	Along Interstate 5 about 2 miles south of Patterson exit.	Tule-lined drainage ditch along freeway in nonirrigated grassland. Water 1-2 feet deep.	Size of colony approximately 1 acre. Most nests contained four eggs. Checked colony again on 5/9/71; birds are almost ready to fledge. Banded 500 nestlings on 5/11/71 (about 1/3 of total colony production). Revisited colony again on 5/25/72; colony is not active this year; cattails have been plowed under and drainage ditches dug.	Unknown	DeHaven unpublished field data
5/5/71	1,500 ind. 900 nests	Along south side of Maize Boulevard, 7 miles west of Modesto.	Salt marsh pond with cattail and bulrush by nonirrigated pastures.	Size of colony approximately 0.75 acre. Birds observed feeding young that are 6 days old; 60 percent of the nests are either empyy or with young and 40 percent contain two to three eggs. Found dead young on ground, possibly due to rain.	Unknown	DeHaven unpublished field data
5/5/71	8,500 ind. 5,500 nests	Junction of Fulkerth and Vivian Roads, 9 miles southwest of Modesto.	Cattail marsh surrounded by nonirrigated pastures and alfalfa fields. Water depth - 1 foot all over.	Size of colony approximately 2.5 acres. Three stages of nesting: young fledglings (75 percent), 4-day old young (20 percent), and freshly built nests (5 percent). "Excellent production; saw thousands of young in marsh."	Unknown	DeHaven unpublished field data

Appendix I-36. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				Revised colony on 5/26/72; not active this year.		
5/5/71	1,000 ind.	Junction of West Main and Crows Landing Roads, 8 miles west of Turlock.	Tules.	Size of colony 1/10 of an acre. Noted some young have already fledged, but most nests have eggs. On 5/9/71, observed fresh clutches. On 5/17/71, observed young fledging. On 5/26/72, no colony this year; tules have been plowed under. On 6/5/74, noted about 500 tricoloreds apparently feeding young (did not confirm).	Unknown	DeHaven unpublished field data
5/5/71	450 ind. 300 nests	Near junction of Crows Landing and Bradbury Roads, 8 miles west-southwest of Turlock.	Cattails in 3-4 feet of water; all new growth.	Size of colony 1/20 of an acre. Just starting to lay one to three eggs, but some nests still empty. On 5/26/72, revisiting site. No colony this year; tules have been removed.	Unknown	DeHaven unpublished field data
5/5/71	225 ind. 100 nests	Four miles east of Crows Landing.	Cattail marsh; water 1 foot deep. Mostly old cattail but some new growth noted.	Size of colony approximately 0.25 acre. Most nests contain four eggs, some with three eggs. Eggs have been incubated about 3 days. One nest found with two 4-day old young.	Unknown	DeHaven unpublished field data

Appendix I–36. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
				On 4/22/75, revisited colony. Noted 2,500 individuals in 3rd or 4th day of nest building.		
5/9/71	1,000 ind.	Five miles southwest of La Grange (#1) near Turlock Reservoir.	Narrow strip of cattail in riparian stream bottom/gravel gravel pit area surrounded by nonirrigated rolling hills pasture.	Size of colony approximately 0.75 acre. No apparent nesting yet; just milling around.	Unknown	DeHaven unpublished field data
5/9/71	2,500 ind.	Three and one-half miles south-west of La Grange.	Cattail marsh surrounded by irrigated and nonirrigated pastures in rolling hills.	Size of colony approximately 0.5 acre. Noted a few birds starting to build nests but most are just sitting and singing; may not nest here because of very sparse cattails (large marshes noted to the south).	Unknown	DeHaven unpublished field data
5/9/71	1,500 ind.	Four and one-half miles west of Merced; southside of Highway 140.	Blackberries in irrigated pastures.	Size of colony 1/25 of an acre. Unknown if this is a nesting site; area is too inaccessible to reach.	Unknown	DeHaven unpublished field data
6/71	8,500 ind.	Crows Landing.	Tule/bulrush mixture.	Banded 1,100 fledglings.	Unknown	DeHaven unpublished field data
6/17/71	5,000 ind. 3,000 nests	One and one-half miles north-west of the intersection of Carpenter and West Main Avenue and about 10 miles west of Modesto.	Tules.	Size of colony approximately 2 acres. Observed adults foraging food for young.	Unknown	DeHaven unpublished field data

Appendix I–36. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/20/72	Several hundred ind.	Sonora Road, east of Woodward Reservoir.	Tules and cattails in a small pond with a small area of irrigated land in the vicinity, but the area was generally dry, short grassland on low rolling terrain.	Observed tricoloreds flying to and from a nesting colony.	Unknown	Cogswell pers. comm.
5/25/72	1,200-1,500 ind. 800-1,000 nests	One mile northeast of 4/28/71 colony, approximately 2 miles west of Patterson.	Cattail marsh; water 1-1.5 feet deep.	Size of colony approximately 0.1 acre. Young are just beginning to fledge.	Unknown	DeHaven unpublished field data
5/26/72	500 ind.	One-half mile west of 5/5/71 colony (junction of West Main and Crows Landing Roads, 8 miles west of Turlock). Turlock.	Tules.	Size of colony approximately 0.2 acre. Noted that young have fledged and are just hanging around the marsh.	Unknown	DeHaven unpublished field data
5/26/72	1,000 ind. 600-700 nests	One-half mile west of 5/5/71 site (junction of Fulkerth and Vivian Roads, 9 miles southwest of Modesto).	Cattails and bulrush pond.	Size of colony approximately 0.3 acre. Some young have already fledged and are in marsh. Many new clutches containing two to four eggs.	Unknown	DeHaven unpublished field data
5/26/72	1,000-1,200 ind. 750-1,000 nests	Junction of Laird and Keyes Road, about 5 miles northwest of 5/5/71 colony (see above).	Bulrush; water 0-14 inches deep.	Size of colony approximately 0.5 acre. Noted most nests contained three to four fresh eggs.	Unknown	DeHaven unpublished field data

Appendix I–36. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/5/74	Data not available	Junction of Maize Boulevard and River Road.	Data not available.	Observed adults and fledglings in the area but actual colony not located.	Unknown	DeHaven unpublished field data
6/5/74	500-1,000 ind.	Two miles east of junction of Maize Boulevard and River Road.	Cattail marsh.	Possible nesting site but not confirmed.	Unknown	DeHaven unpublished field data
6/4/74	2,000 ind.	One mile south of Crows Landing colony (6/71 above).	Cattails.	Noted adults feeding young.	Unknown	DeHaven unpublished field data
6/5/74	Less than 500 ind.	Two miles east of Newman.	Cattails.	Noted adults feeding young.	Unknown	DeHaven unpublished field data
4/22/75	2,500 ind.	Four miles east of Crows Landing.	Cattails.	Colony of 2,500 observed by Crase during early nest-building stage.	Unknown	Natural Diversity Data Base (data from DeHaven)
4/22/75	7500 ind.	Hills Ferry Road, 2.6 miles east of Newman.	Bulrush/tules; water 3-4 feet deep.	Size of colony approximately 0.75 acre. Nests containing one to three eggs noted.	Unknown	DeHaven unpublished field data
<u>1980-1989</u>						
7/9/80	Data not available	North of Warnerville Road (0.3 mile) on Stearns Road, approximately 8 miles north-northwest of Waterford. (Waterford T2S R10E S24 N/SE)	Tules		Unknown	Natural Diversity Data Base (data from Small)
5/25/81	1,355 ind.	Junction of Keyes Road and Muncy Road, approximately 5 miles southwest of Modesto. (Brush Lake T4S R8E S27 SE/SW)	Cattails and bulrush.	Size of colony approximately 0.25 acre. Incubation observed.	Unknown	Hosea 1986

Appendix I–36. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/25/81	11,263 ind.	Junction of Vivian Road and Fulkerth Road, approximately 9 miles south-southwest of Modesto.	Bulrush.	Size of colony approximately 2.75 acres. Probable breeding colony.	Unknown	Hosea 1982
6/21/86	1,000-1,500 ind.	Jennings Road.	Data not available.	Estimated 300 pairs at height of nesting. All birds gone by 7/13.	Unknown	American Birds file data
4/23/87	400+ ind.	Milton Road, south of Calaveras County line.	Grasslands.	Tricolored nesting among blackbirds at riparian edge.	Unknown	American Birds file data
6/9/87	175-200 ind.	Littlejohns Creek near the town of Oakdale on Sonora Road. (Oakdale T1S R11E)	Small pond with cattails. Black-berries and willows along road and creek. Valley foothill riparian, remnant surrounded by grazed annual grassland.	Size of colony approximately 1 acre. Adults observed foraging and carrying food to blackberry bushes; no nests seen. Successful nesting indicated by observation of fledged young. Future 1989/90 bridge replacement and widening plus road widening may disturb the colony. Visited site on 6/24/87; no tricolored blackbirds seen at colony but flocks observed within 0.25 mile.	Unknown	Walters pers. comm.

Appendix I-37. Tricolored Blackbird Nesting Observations in Sutter County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/5/32	5,000 nests	Twenty miles north of Sacramento.	Cattail/tule/thistle marsh.		Presumed extirpated	Neff 1937
5/21/32	5,000 nests	Five miles north of Robbins.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
5/19/33	500 nests	Near Meridian.	Cattails around lake.		Presumed extirpated	Neff 1937
	5,000 nests	North of Robbins.	Cattail marsh.		Presumed extirpated	Neff 1937
5/26/33	7,500 nests	Twenty miles north of Sacramento.	Cattail marsh.		Presumed extirpated	Neff 1937
5/24/34	2,500 nests	Near Meridian.	Cattails and tules around lake.		Presumed extirpated	Neff 1937
	3,500 nests	North of Sutter Causeway.	Cattail marsh.		Presumed extirpated	Neff 1937
5/20/35	500 nests	Sutter Basin.	Cattails along canal.		Presumed extirpated	Neff 1937
	750 nests	Near Meridian.	Cattails along canal.		Presumed extirpated	Neff 1937
5/25/36	3,000 nests	Near Verona.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
1960-1969						
Spring 1960	6,000 nests	Buttes.	Data not available.	Began nest building on 5/10, egglaying on 5-14, and incubating on 5/17. This colony was destroyed.	Unknown	Orians 1961
1970-1979						
1971	Data not available	West Butte Road, 5 miles east of Colusa.	Cattails.	Colony nesting in cattails.	Unknown	Natural Diversity Data Base (data from DeHaven)

Appendix I–37. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/4/74	2,000 ind.	Three miles northwest of Sutter.	Blackberries.	Size of colony approximately 0.1 acre. Possible nesting colony but did not check.	Unknown	DeHaven unpublished field data
6/12/74	30,000 ind.	Gilsizer Slough.	Tules.	Size of colony approximately 3 acres. Nest building activity beginning.	Unknown	DeHaven unpublished field data
<u>1980-1989</u>						
5/27/85	2,000 ind.	Small marsh just west of West Butte Road, near the turn to the Honolulu Duck Club in the Butte Sink. (Sanborn Slough T16N R1E S7 SE)	Cattail and tule marsh.	Size of colony approximately 2 acres. Colony observed in small marsh. Visited colony again on 4/26/86; estimated 1,000 nests.	Unknown, extant habitat	American Birds file data
				Visited site on 5/10/87-6/10/87 and 5/15/88; site found abandoned; colony failed--cause unknown. Habitat extant but the site was not used in 1988 or 1989.		Beedy and Hayworth (in press); Deuel pers. comm.
4/4/87	Hundreds (nearly all females)	East Levee Road (Natomas) just south of intersection with Riego Road.	Cattails.	Unknown if colony nested at this site.	Unknown	Manolis pers. comm.
6/20/87	10,000 ind.	Milepost 14 on levee road where Gitsizer Slough meets the east Sutter Bypass levee.	Tule-cattail marsh.	Size of colony approximately 60 acres. Nesting colony previously not known. Unknown if colony fledged youngin 1987. Visited site on 7/4/88; adults observed feeding young. Fewer birds (4,000 ind.) seen than 1986 visit. Marsh was burned in February 1988 and again in February 1989; not known if burning is an annual event.	Presumed extant	Deuel pers. comm.

Appendix I–38. Tricolored Blackbird Nesting Observations in Tehama County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/27/36	750 prs.	Near Orland.	Cattails along creek.		Presumed extirpated	Neff 1937
1970-1979						
6/6/72	2,000 ind. 1,500 nests	Gay Creek, just past Glenn County.	Tules, blackberries, willows, and cottonwood in vicinity; nests in tules.	Size of colony approximately 2 acres. Birds have already fledged; appears that 95 percent of nests were successful.	Unknown	DeHaven unpublished field data

Appendix I-39. Tricolored Blackbird Nesting Observations in Tulare County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/13/35	1,500 nests	Near Pixley.	Cattail marsh.		Presumed extirpated	Neff 1937
1970-1979						
5/5/71	1,500 ind.	Success Dam, 8 miles east of Porterville.	Data not available.	Birds observed carrying insects to nestlings in an inaccessible area.	Unknown	DeHaven unpublished field data
1980-1989						
3/28/82	100-200 ind.	Creighton Ranch Preserve.	Data not available.	One bird observed on 3/28; up to 200 by 4/7. Known areas of tricolored blackbirds (several thousands TCBB's observed at each location for the last several years): o South Fork Kern River on the Kern River Preserve; o U. S. Army Corps of Engineers' South Fork Wildlife area east of Isabella Reservoir; o Frazier Valley north of Porterville, Tulare County; and o Yokohl Valley east of Exeter, Tulare County.	Unknown	American Birds file data Barnes pers. comm.

Appendix I–40. Tricolored Blackbird Nesting Observations in Ventura County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
1872	200 prs.	Santa Clara Valley.	Nettles and briars in a pasture.	Definite nesting colony.	Presumed extirpated	H. W. Henshaw (cited in Neff 1937)
1872-1873	Data not available	Near Saticoy (latitude: 34 degrees, 27 minutes; altitute: 50 feet).	Data not available.	Nesting observed on May 22. Nesting near Saticoy to June 21, 1875.	Presumed extirpated	Cooper 1880
1875	Hundreds of ind.	Saticoy.	Nettles.	Hundreds of nests found in the nettle thicket; no nests located in nearby cattails or rushes.	Presumed extirpated	Cooper 1875

Appendix I–41. Tricolored Blackbird Nesting Observations in Yolo County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
5/31/31	4,000 nests	Five miles east of Woodland.	Cattails around reservoir.		Extirpated	Neff 1937
	3,000 nests	Five miles east of Woodland.	Cattails along canal.		Extirpated	Neff 1937
	3,000 nests	Five miles east of Woodland.	Cattail marsh.		Extirpated	Neff 1937
4/9/32	5,000 nests	Northern county line.	Cattails along canal.		Extirpated	Neff 1937
5/21/32	5,000 nests	Six miles west of Sacramento.	Thistles/mustard along levee.		Extirpated	Neff 1937
5/24/32	28,000 nests	Near Davis.	Thistle field.		Extirpated	Neff 1937
6/1/33	3,000 nests	Six miles southwest of Sacramento.	Cattail marsh.		Extirpated	Neff 1937
6/4/34	2,000 nests	Six miles west of Sacramento.	Cattail marsh.		Extirpated	Neff 1937
5/24/35	5,000 nests	South of Elkhorn.	Thistles along levee.		Extirpated	Neff 1937
6/18/35	5,000 nests	Southwest of Verona.	Cattails around pothole.		Extirpated	Neff 1937
6/1/36	1,000 nests	Near Woodland.	Cattails and tules along canal.		Extirpated	Neff 1937
	1,000 nests	Near Woodland.	Cattail marsh.		Extirpated	Neff 1937
5/13/39	2,000 ind.	Willow Slough.	Cattails.	Observed nest building on 5/13, egglaying and/or incubation on 5/16, and hatching between 5/22 and 5/27. By 5/30, only 40 birds remained; many nests had been disturbed and the eggs broken.	Presumed extirpated	Lack and Emlen 1939

Appendix I–41. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1960-1969						
Spring 1960	70,000 nests	Madison.	Data not available.	Began nest building on 5/4, egglaying on 5/8, incubating on 5/11, and feeding young on 5/22.	Extirpated	Orians 1961
1970-1979						
4/5/71	1,750 ind.	Port of West Sacramento, West Sacramento.	Mustard and star thistle (no water).	Size of colony approximately 2 acres. Nests located in 5-foot thistles-- hard to observe.	Extirpated	DeHaven unpublished field data
5/12/71	150 ind. 100 nests	Woodland sugar ponds; 3 miles northeast of Woodland.	Thistles.	Size of colony approximately 1/20 of an acre. Observed egglaying; most nests contained one or two eggs. A few nests still emtpy.	Extirpated	DeHaven unpublished field data
				Site visited on 5/10/72; 1,000 individuals observed. Size of colony approximately 0.25 acre. Egg-laying just beginning.	Extirpated	DeHaven unpublished field data
				Site visited on 4/25/74; 250 individuals observed. The wetlands supporting this colony were drained to create a sugar beet field in the mid-1970's.	Extirpated, habitat eliminated	American Birds file data
5/12/71	15,000 ind.	Knights Landing, 1.75 miles north.	Wild raspberry with a few willow trees mixed in rice-growing area.	Size of colony approximately 2 acres. Nest building activity just beginning.	Extirpated	DeHaven unpublished field data

Appendix I–41. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/15/71	10,000 ind.	River Farms colony (from 1969).	Cattail marsh.	Size of colony approximately 1.5 acres. Observed adults feeding young.	Extirpated	DeHaven unpublished field data
5/10/72	25,000 ind.	Three miles north of Knights Landing.	Tule ditch/willows/thistle.	Size of colony approximately 1.5 acres. Observed nests containing one to four eggs. Also nest building activity continuing.	Extirpated	DeHaven unpublished field data

Appendix I–42. Tricolored Blackbird Nesting Observations in Yuba County

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1920-1949						
4/12/31	3,000 nests	Twelve miles NE of Marysville.	Cattails and tules along slough.		Presumed extirpated	Neff 1937
4/15/31	10,000 nests	Two miles west of Hammonton.	Cattails around dredger pits.		Presumed extirpated	Neff 1937
4/23/31	30,000 nests	Twelve miles NE of Marysville.	Cattails and tules along slough.		Presumed extirpated	Neff 1937
4/24/31	10,000 nests	Ten miles NE of Marysville.	Cattails and tules along slough.		Presumed extirpated	Neff 1937
5/4/31	50,000 nests	Twelve miles NE of Marysville.	Willows, cattails, and tules along slough.		Presumed extirpated	Neff 1937
5/20/31	Data not available, but in the tens of thousands	Nigger Jack area, 12 miles north of Marysville.	Cattail rushes bordered by a miniature forest of willows, growing in clusters of 20 feet or more in height.	Very large nesting colony which was used by the Biological Survey, USDA, as the site for an experiment to develop effective methods of large-scale destruction of black-birds by poisoning with strychnine. Most of the young birds were either dead, starving, or grilling and parching by sunburn. Estimate the total number of tricolored blackbirds destroyed at 30,000.	Presumed extirpated	McCabe 1932
5/26/31	2,000 nests	Nine miles NE of Marysville.	Cattails along canal.		Presumed extirpated	Neff 1937
6/1/31	3,000 nests	One mile northwest of Hallwood.	Cattails and tules along slough.		Presumed extirpated	Neff 1937
6/17/31	3,000 nests	Eight miles NE of Marysville.	Cattails along slough.		Presumed extirpated	Neff 1937
6/20/31	2,000 nests	Fourteen miles NE of Marysville.	Cattails/willows along Dry Creek.		Presumed extirpated	Neff 1937

Appendix I–42. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
5/20/32	100 nests	Twelve miles NE of Marysville.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
6/20/32	2,000 nests	Fifteen miles south of Marysville.	Cattail/tule marsh.		Presumed extirpated	Neff 1937
4/28/33	2,500 nests	Twelve miles NE of Marysville.	Cattails and tules along slough.		Presumed extirpated	Neff 1937
5/4/33	5,000 nests	Twelve miles NE of Marysville.	Cattail marsh.		Presumed extirpated	Neff 1937
5/1/34	35,000 nests	Ten miles south of Marysville.	Cattail marsh.		Presumed extirpated	Neff 1937
5/15/34	15,000 nests	Two miles west of Hammonton.	Cattails around pits.		Presumed extirpated	Neff 1937
5/20/35	2,000 nests	Northeast of Marysville.	Cattails and tules along slough.		Presumed extirpated	Neff 1937
5/21/35	3,000 nests	South of Marysville.	Cattails along slough.		Presumed extirpated	Neff 1937
May 1936	5,000 nests	Composite of all areas.	Data not available.		Presumed extirpated	Neff 1937
5/16/39	60,000 ind.	Near Marysville.	Cattails.	Colony was reported to contain about 60,000 tricoloreds up to 5/12. On 5/16 visit, only a few hundred were left. Of 100 nests examined, three-fourths contained freshly broken eggs. On 6/2, no adult birds were seen in the vicinity. Destruction appeared to be caused by a small species of bird.	Unknown	Lack and Emlen 1939
Spring 1940	22,000 nests	Hammonton and Arboga.	Data not available.	Two colonies: one near Hammonton with about 7,000 nests, and the other near Arboga with about 15,000 nests.	Unknown	Emlen 1941

Appendix I–42. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1950-1959						
Spring 1959	15,000 nests	Haskell Ranch.	Cattail marsh.	Began nest building on 4/28, egglaying on 4/30, incubating on 5/2, and feeding young on 5/14. On 5/12, poisoning noted. Also, a magpie is seen in colony and observed flying with an egg in its bill on 5/13. Many eggs are smashed and punctured in nests.	Unknown	Orians 1961
Spring 1959	40,000 nests	Marysville - 40 mile road near junction of Highway 99.	Data not available.	Began nest building on 5/3, egglaying on 5/6, incubating on 5/8, and feeding young on 5/20. Noted that many new nests are being constructed on 5/30; also, many dead young beneath nests. On 6/11, observed free-flying young everywhere.	Unknown	Orians 1961
10/16/59	2,150 nests	Haskell Ranch, 8 miles southeast of Marysville.	Cattails.	Autumnal breeding colony; nest building began 10/3, egg laying began on 10/7, and nestlings hatching on 10/23. Many of the nests were abandoned after eggs were laid and nestling survival was poor. Only about 50 young fledged.	Unknown	Orians 1960
1960-1969						
Spring 1960	1,500 nests	Haskell Ranch (site A).	Data not available.	Began nest building on 4/28, egglaying on 4/22, and incubating on 4/25. This colony was destroyed, possibly by snakes.	Unknown	Orians 1961

Appendix I–42. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
Spring 1960	15,000 nests	Haskell Ranch (site B).	Data not available.	Began nest building on 5/23, egglaying on 5/27, incubating on 5/30, and feeding young on 6/10.	Unknown	Orians 1961
Spring 1960	800 nests	Marysville.	Data not available.	Began nest building on 4/29, egglaying on 5/2, and incubating on 5/5. This colony was destroyed, possibly by snakes.	Unknown	Orians 1961
10/60	400 nests	Marysville.	Data not available.	Autumnal breeding colony; nest building began 10/7.	Unknown	Payne 1969
6/10-14/61	2,000 ind.	Haskell Ranch.	Data not available.	Number of nests: 400 Number of nests fledged: --	Unknown	Payne 1969
9/61	300 nests	Marysville.	Data not available.	Autumnal breeding colony; nest building began 9/24.	Unknown	Payne 1969
9/61	100 nests	Marysville.	Data not available.	Autumnal breeding colony; nest building began 10/16.	Unknown	Payne 1969
4/17-22/62	200 ind.	Haskell Ranch.	Data not available.	Number of nests: 4 Number of nests fledged: 0	Unknown	Payne 1969
5/3-16/62	10,000 ind.	Haskell Ranch.	Data not available.	Number of nests: 2,000 Number of nests fledged: 800	Unknown	Payne 1969
5/20/62-6/20/62	40,000 ind.	Haskell Ranch.	Data not available.	Number of nests: 24,000 Number of nests fledged: 14,000	Unknown	Payne 1969

Appendix I–42. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
10/62	200 nests	Marysville.	Data not available.	Autumnal breeding colony; nest building began 10/6.	Unknown	Payne 1969
4/2-6/63	800 ind.	Haskell Ranch.	Data not available.	Number of nests: 800 Number of nest fledged: 200	Unknown	Payne 1969
5/26/63-6/4/63	10,000 ind.	Watts Ranch.	Data not available.	Number of nests: 4,000 Number of nest fledged: --	Unknown	Payne 1969
9/63	300 nests	Marysville.	Data not available.	Autumnal breeding colony; nest building began 9/28.	Unknown	Payne 1969
10/63	100 nests	Marysville.	Data not available.	Autumnal breeding colony; nest building began 10/13.	Unknown	Payne 1969
5/2-6/64	200 ind.	Haskell Ranch.	Data not available.	Number of nests: 200 Number of nest fledged: 100	Unknown	Payne 1969
5/20/64-6/12/64	18,000 ind.	Red Barn Ranch.	Data not available.	Number of nests: 10,000 Number of nest fledged: --	Unknown	Payne 1969
10/64	100 nests	Marysville.	Data not available.	Autumnal breeding colony; nest building began 10/6.	Unknown	Payne 1969
1980-1989						
6/17/82	700 to 750 ind.	Schuster Ranch, approximately 2.5 miles southeast of Olivehurst. (Olivehurst T14N R4E S22)	Rice and cattails.	Fledglings observed.	Unknown	Hosea 1986

Appendix I–42. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/17/82	4,050 to 4,425 ind.	Plumas - Arboga Road, approximately 3 miles south of Olivehurst. (Olivehurst T14N R4E S28)	Cattails in pond.	Fledglings observed.	Unknown	Hosea 1986

Table I–43. Tricolored Blackbird Nesting Observations in Baja California

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1800-1899						
6/85	Data not available	Data not available.	Data not available.	Large colony found nesting in tules. Reported as rather common and breeding in all freshwater marshes along the northwest coast of Baja.	Unknown	Bendire 1895
1900-1929						
3/2/25	--	Upper San Antonio del Mar.	Data not available.	Twelve males were observed in a nonbreeding flock of red-winged blackbirds.	--	Huey 1926
1980-1989						
				Very few reports in recent years (mostly in winter). Several likely breeding spots in the northwestern corner of Baja, particularly in the Guadalupe and San Rafael Valleys north and east of Ensenada.		Wilbur pers. comm.

Appendix I–44. Tricolored Blackbird Nesting Observations in Oregon

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
		JACKSON COUNTY				
1950-1959						
6/2/58	1,500 ind.	Bear Creek, just east of Central Point.	Blackberry vines.	Observed young birds in nests on 6/21. In 1959, unable to find nesting colony.	Unknown	Richardson 1961
1960-1969						
5/30/60	1,800 ind.	White Camp area near the Rogue river, north of Medford. (Medford T36S R1W S18)	Cattail marsh.	Nesting confirmed. Collected three males, three females, and three nests with three eggs. The marsh was drained in 1961. The birds were later found nesting 1 mile east of Eagle Point in a wild blackberry patch.	Habitat eliminated	Richardson 1961 (data from Oregon Natural Heritage Data Base)
6/65	Several hundred	Wagner Creek, 6 miles west of Talent.	Data not available.	Observed nesting at this location.	Unknown	Audubon Field Notes 19(8):573
1970-1979						
5/13/70	500-600 ind.	Talent's Bear Creek Park, (now named Lynn Newbry Park), Talent, Oregon.	Blackberry and willow.	Observed many nests; some with eggs. Ten tricoloreds banded: 1 male, 9 females near nesting colony. On 5/17, 5 more females banded.	Unknown	Swisher pers. comm. & Cornell University, Laboratory of Ornithology (data from Swisher)

Appendix I–44. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
6/77	Data not available	1.6 km east of Eagle Point. (Medford T36S R1W S2)	Data not available.	Breeding colony first reported in 1964. A small nesting colony found near Eagle Point in 1977. This location is across the Cascade crest (about 75 km west of the northernmost regular breeding site at Klamath Lake.	Unknown	Richardson & Sturges 1964; Roberts & Contreras 1977 (data from Oregon Natural Heritage Data Base)
<u>1980-1989</u>						
5/83	10 prs.	Located between Biddle and Bullock Roads by a creek, near City of Medford. (Medford T37S R2W S12)	Blackberry bushes.	Observed adults feeding young; nests were as close as 3 feet apart. McCamant & Richardson first observed a nesting colony of about 1,500 individuals on Bear Creek on 6/2/58. Revisited site on 6/21 and found all nests with young birds. No birds found on 1959 visit.	Unknown	Swisher pers. comm. McCamant & Richardson 1958 (data also from Oregon Natural Heritage Data Base)
5/17/83	30 ind.	Bullock Island, Jackson County airport.	Data not available.	Nesting colony.	Unknown	Eltzroth pers. comm. (data from Swisher)
		<u>KLAMATH COUNTY</u>				
<u>1920-1949</u>						
6/14/33	50 ind.	26 miles north of Klamath Falls on the Copco Ranch near Agency Lake. (Chiloquin T34W R7E S19)	Nesting in nettles (Urtica) on the levee separating Agency Lake from from adjacent ranch land.	Nesting colony. About 20 nests were under construction, three containing one egg each. Nine males were collected as specimens.	Presumed extirpated	Neff 1933

Appendix I–44. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1970-1979						
3/78	"Colony"	Miller Island.	Data not available.		Unknown	Eltzroth pers. comm. (Oregon Birds data)
8/78	180 prs.	Upper Klamath National Wildlife Refuge. (Pelican Butte T35S R73 S19)	Data not available.	Two colonies first observed in 1971.	Unknown	DeHaven and Crase 1975. (From the Oregon Natural Heritage Data Base)
1980-1989						
4/5/80	500 ind.	Miller Island Game Management Area near Malin.	Data not available.	Nesting site.	Unknown	Eltzroth pers. comm.
6/2/85	Data not available	Along old Highway 62 north of Modoc Point.	Data not available.	Two nesting colonies observed at the two locations noted. No other information available.	Unknown	Swisher pers. comm.
4/16/86	150 males	Southeast of Alkali Lake on Bergdorff Road at the east end of small marsh. (Malin T39S R11E S18)	Small cattail marsh.	150 male birds observed singing. Unknown if this was a breeding colony.	Unknown	Data by Stern & Rosenberg (From the Oregon Natural Heritage Data Base)
		MULTNOMAH COUNTY				
1980-1989						
Summer 1984	"Colony"	Portland.	Data not available.		Unknown	Eltzroth pers. comm. (data from American Birds file)

Appendix I–44. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
1985	20-30 ind.	St. Johns Landfill in Portland. (Portland T1N R1E S3)	Dense Himalayan blackberries adjacent to a blind slough with sparse tree cover along the slough margins.	Houck et al. first observed 36 birds apparently nesting on 6/25/83.	Habitat eliminated	Houck et al. (From Oregon Natural Heritage Data Base)
1985	Data not available	South of Tomahawk Island on Northeast Brighton Road, off of Marine Drive. (Portland T1N R1E S3)	Dense Himalayan blackberries along a blind slough.	Small population observed during the nesting season; nesting not confirmed.	Extirpated; habitat eliminated	Houck et al. (From Oregon Natural Heritage Data Base)
		UMITILLA COUNTY				
1980-1989						
4/21/89	20 prs.	Junction of Highway 207 and Interstate 84, 0.5 mile east.	Cattail marsh and small adjacent shallow pond (swamp) with flooded out dead willows.	Size of colony approximately 1-2 acres. Unknown if colony successfully nested. Disturbance to colony may be a larger colony of yellow-headed and red-winged blackbirds.	Extant	Sullivan pers. comm.
4/26/89	20 ind.	One-half mile east of the junction of Interstate 80 north and Highway 207.	Cattails in a small freshwater marsh.	Territorial behavior observed but nest searches not conducted. Colony failed to successfully nest, possibly due to competitive exclusion by yellow-headed blackbirds.	Extant	Corder pers. comm.

Appendix I–44. Continued

DATE OF OBSER-VATION	NUMBER OF BIRDS	LOCATION	SUBSTRATE/ HABITAT	COMMENTS	CURRENT STATUS OF COLONY	SOURCE
		WHEELER COUNTY				
1980-1989						
5/84	Data not available	Hancock Field Station.	Data not available.	Nesting colony.	Unknown	Eltzroth pers. comm.

Tricolored Blackbird Status Update and Management Guidelines

Prepared for:

Migratory Birds and Habitat Programs
U.S. Fish and Wildlife Service

Bird and Mammal Conservation Program
California Department of Fish and Game

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TRICOLORED BLACKBIRD STATUS UPDATE AND MANAGEMENT GUIDELINES

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I. Introduction

The tricolored blackbird *(Agelaius tricolor)* is a highly colonial species that is largely endemic to California. It is most numerous in the Central Valley and vicinity, but also occurs in the foothills surrounding that valley. In addition, the species occurs sparsely in coastal California, Oregon, northwestern Baja California (Dawson 1923, Neff 1937, Grinnell and Miller 1944, DeHaven et al. 1975a, Beedy et al. 1991), and rarely in western Nevada (Chisholm pers. comm.). Historical and recent surveys indicate that the tricolored blackbird's (tricolor's) overall distribution and choice of nesting locations varies from year to year (Neff 1937, DeHaven et al. 1975a, Hamilton et al. 1995).

The current and future status of tricolors is of concern because the colonial behavior of this species may make them vulnerable to large-scale nesting failures and their geographical range is limited (Neff 1937, DeHaven et al. 1975a, Beedy et al. 1991). Local declines and extirpations of this species have been confirmed (Beedy et al. 1991), and DeHaven et al. (1975a) reported that the overall population was greatly reduced from that observed by Neff (1937) during the 1930s.

Based on concerns about the tricolor's population status, the U.S. Fish and Wildlife Service (USFWS) included this species as a candidate (Category 2) for federal listing as either threatened or endangered (59 Federal Register [219]:58990) in 1991. USFWS policy changes in 1995 eliminated the Category 2 candidate designation nationwide and the tricolor is now considered a nongame bird of management concern (U. S. Fish and Wildlife Service 1995). It is also considered a bird species of special concern in California by the California Department of Fish and Game (DFG) (Comrack and Hunting pers. comms.). These designations do not provide any specific legal protection; however, the species is afforded basic protection under the federal Migratory Bird Treaty Act of 1918, and the species of special concern designation means that tricolors must be considered during project actions subject to the California Environmental Quality Act.

In 1989, the USFWS Sacramento Field Office commissioned a literature review and update of the tricolor's population status (Beedy et al. 1991). From 1991 through 1994, USFWS and DFG cooperatively funded intensive breeding season surveys to document the current status, habitat associations, and reproductive success of tricolors (Hamilton et al. 1995). Incomplete surveys were conducted in 1995 and 1996. In 1997, DFG coordinated an intensive survey throughout the historical range of the tricolor in California.

This report was prepared to: 1) assist public and private land managers in understanding and enhancing populations and habitats of this species, and 2) to provide the background information and direction needed to incorporate tricolor conservation actions into broader multispecies, ecosystem-based conservation planning efforts in the Central Valley and in southern California. Included are a summary of the tricolor's life

history, historical and current population statuses, threats to populations, and conservation and management recommendations.

2. Life History Summary

Habitat Requirements

Breeding

Tricolors are among the most colonial of North American passerine birds (Bent 1958; Orians 1961a, 1980; Orians and Collier 1963). Neff (1937) described one colony in Glenn County with more than 200,000 nests. As many as 100,000 nests have been recorded in cattail marshes of 4 hectares (ha) or less (Neff 1937, DeHaven et al. 1975a), and individual nests may be built immediately adjacent to each other (Neff 1937). The tricolor's highly synchronized and colonial breeding system may have adapted to exploit a rapidly changing environment where the locations of secure nesting habitat and rich insect food supplies were ephemeral and likely to change each year (Orians 1961b, Orians and Collier 1963, Collier 1968, Payne 1969).

Tricolors have three basic requirements for selecting their breeding colony sites: (1) open accessible water; (2) a protected nesting substrate, which is usually either flooded or thorny or spiny vegetation; and (3) a suitable foraging space providing adequate insect prey within a few kilometers (km) of the nesting colony (Beedy 1989, Hamilton et al. 1995).

Almost 93 % of the 252 tricolor breeding colonies reported by Neff (1937) were in freshwater marshes dominated by tules *(Scirpus* sp.) and cattails *(Typha* sp.). The remaining colonies in Neff's study were in willows *(Salix* spp.), blackberries *(Rubus* sp.), thistles *(Cirsium* and *Centaurea* spp.), or nettles *(Urtica* sp.). In contrast, only 53 % of the colonies reported during the 1970s were in cattails and tules (DeHaven et al. 1975a).

An increasing percentage of tricolor colonies in the 1980s and 1990s were reported in Himalaya berries *(Rubus discolor),* and some of the largest recent colonies are in silage and grain fields (Hamilton et al. 1995). Other substrates where tricolors have been observed nesting include giant cane *(Arundo donax),* safflower *(Carthamus tinctorius)* (DeHaven et al. 1975a), tamarisk trees *(Tamarix* spp.), and poison-oak *(Toxicodendron diversilobum).* In addition, they have been found in habitats that include riparian scrublands (e.g., *Salix, Populus, Fraxinus)* and forests and a lemon orchard (American Birds file data).

Foraging

Tricolor foraging habitats in all seasons include pastures, dry seasonal pools, agricultural fields (such as large tracts of alfalfa with continuous mowing schedules), rice fields, feedlots, and dairies. Tricolors also forage occasionally in riparian scrub, saltbush *(Atriplex spp.)* scrub, marsh borders, and grassland habitats. Weed free row crops and intensively managed orchards and vineyards do not serve as regular foraging sites.

During nesting, tricolors forage away from their nest sites, often well out of sight of the colony. Most tricolors forage within 5 km of their colony sites (Orians 1961b), but commute distances of up to 13 km have been reported (Hamilton pers. obs.). Short-distance foraging (i.e., within sight of the colony) for nestling provisioning also is common. Both sexes provision nestlings.

Often only a minor fraction of the area within the commuting range of a colony provides suitable foraging habitat. For example, within a 5-km radius there may be low-quality foraging habitats, such as cultivated row crops, orchards, vineyards, and heavily grazed rangelands, in association with high-quality foraging areas, such as irrigated pastures, lightly grazed nonnative grasslands, dry seasonal pools, and recently mowed alfalfa fields.

Large flocks of foraging tricolors may appear to roll across the landscape, as smaller groups leap-frog over those in front of them. The flight speed of tricolors in still air is about 48 km per hour, and foraging flocks can often be tracked with a moving automobile (Hamilton pers. obs.).

Reproductive Ecology

Female tricolors breed in their first year, but most males apparently defer breeding until they are at least 2 years old (Payne 1969). Nest construction, done exclusively by females, is often highly synchronous and may be initiated as soon as the day of arrival at the breeding colony (Neff 1937). Additional birds may be recruited to that colony site and initiate nesting later; these birds may nest in a continuing concentric wave at the margin of the colony (Orians 1961b). One female tricolor moved from one colony to another and renested less than 10 days after her previous nest failed (Payne 1969).

Hamilton et al. (1995) observed that most initial spring breeding occurs in late March through April. Most of the largest April colonies are in the San Joaquin Valley and are associated with dairies and cattle feedlots. As nests fail from predation, inclement weather, and agricultural operations, disrupted nesters may renest, both at established locations and at more distant sites. In May and June of 1992, 1993, and 1994, additional colony locations included the Sacramento Valley north of Sacramento

County. Overall, reproductive success for entire colonies was higher in Himalaya berry colonies than in cattail marshes (Cook 1996).

As colonization of a breeding site proceeds, the area occupied by nests expands (Tyler 1907), engulfing any previously established breeding red-winged blackbirds *(Agelaius phoeniceus).* At some colonies, the expansion process ends before all suitable nesting habitats are occupied, while at others all suitable habitats are used for nesting (Hamilton pers. obs.). At some colonies, later nests may be initiated in parts of the colony where advanced, active nests are already present. This pattern occurs at colony sites where all the available nesting area is occupied, suggesting that suitable unoccupied nesting sites are not available.

Tricolor nests are bound to upright plant stems from a few centimeters up to about 2 m above water or ground (Harrison 1978); however, nests in the canopies of willows and ashes may be several meters high (Hamilton and Beedy pers. obs.). Tricolor nests are rarely built on the ground (Neff 1937). Deep cup nests are constructed with outer layers of long leaves (e.g., cattail thatch, annual grasses, or forbs) woven tightly around supporting stems. A middle layer is built within the shaped nests and consists of mud or algal fibers. The inner nest layer is soft plant down. Nest building takes about 4 days (Payne 1969).

Egg laying can begin as early as the second day after nest initiation but ordinarily starts about 4 days after the arrival of tricolors at breeding sites (Payne 1969). One egg per day is laid, and clutch size is usually three or four eggs, but may include as few as one or two or as many as five eggs (Payne 1969, Hamilton et al. 1995).

Male song ceases after the last egg is laid, and a waning colony chorus indicates that laying has been completed (Hamilton pers. obs.). Emlen (1941) and Orians (1961a) estimated the tricolor's incubation period at 11 or 12 days, while Payne (1969) estimated this interval at 11-14 days. Incubation begins before clutches are completed, and hatching of eggs within individual nests is asynchronous (Bowen and Hamilton pers. obs.).

Tricolor clutches take about 9 days from hatching until the oldest nestling is willing to jump from the nest when disturbed. Young require about 15 days from this prefledging date until they are independent of their parents. Thus, one successful nesting effort for a reproductive pair takes about 45 days (Payne 1969). The nesting effort of a successful colony may take additional time depending on whether additional females are: recruited into the colony or are renesting at the colony after the initial nesting establishment.

Tricolor activity during the early stages of colony settlement may give the erroneous impression of high local nesting densities because initially more males are typically present at some colonies than will attract mates (Hamilton et al. 1995). Flight activity over colonies during the settlement phase is mainly by males that have not established nesting territories. Males gaining breeding territories may remain below the canopy of nesting substrates and, thus, out of view. The mean number of females per male is

estimated to be two (Lack and Emlen 1939, Orians 1961b, Payne 1969), but some colonies may have nearly as many males as females (Cook and Hamilton pers. obs.). A count of active tricolor nests per unit area is, thus, a better indication of local abundance than numbers of singing males (Neff 1937).

During incubation, males form all-male flocks and may spend the day several kilometers from colonies. After young hatch, however, some males actively attend nests. Whether individual males provide food for nestlings at more than one nest is not known.

Females on nests are quiet during incubation, and active colonies may appear to be largely deserted. The more synchronous colonies are particularly inconspicuous at this stage and can be underestimated or overlooked. Close approach by an observer, however causes females to leave their nests and fly away. Sometimes incubating females by catch during incubation, and there may be a steady upward flight of birds to capture aerial insects over the colony. Grasshopper migrations may be intercepted in this way by colonies provisioning nestlings (Hamilton pers. obs.).

A creche of tricolors is an assembly of fledglings that have left the nest and assembled (Payne 19 69) either at the colony site or at locations between colonies and favorable foraging areas. These fledglings are conspicuous, both because they are vociferous and because adults are feeding them as rapidly as possible (Hamilton pers. obs).

Demography

Banding studies, summarized by Neff (1942) and DeHaven and Neff (1973), indicate that tricolors can live for at least 13 years. There are no annual survivorship studies of tricolors, and available banding data are inadequate to provide this information.

Feeding Ecology

Tricolors were characterized by Orians (1961a) as grasshopper followers, the counterpart of Old World locust-dependent starlings. When Crase and DeHaven's (1977) observations failed to confirm this relationship, they suggested that the decline in tricolor abundance they reported (for the 1968-1972 interval compared with Neff's observations in the 1930s) might reflect a loss of California's grasslands and grasshoppers. However, it is possible that tricolors are opportunistic foragers that consume any locally abundant insect resource, including grasshoppers, and a decline in grasshoppers may not relate directly to a decline in tricolors.

Foods delivered to tricolor nestlings include beetles and weevils, grasshoppers, caddis fly larvae, moth and butterfly larvae (Orians 1961b, Crase and DeHaven 1977,

Skorupa et al. 1980), and, especially in current rice-growing areas, dragonfly larvae (Hamilton pers. obs.). Breeding season foraging studies in Merced County showed that animal matter makes up about 91% of the food volume of nestlings and fledglings, 56% of the food volume of adult females, and 28% of that of adult males (Skorupa et al. 1980).

Adults may continue to consume plant foods throughout the nesting cycle but also forage on insects and other animal foods. Immediately before and during nesting, adult tricolors are often attracted to the vicinity of dairies, where they take high-energy items from livestock feed rations. Adults with access to livestock feed, such as cracked corn, begin providing it to nestlings when they are about 10 days old (Hamilton et al. 1995).

Knowledge of winter feeding habits of tricolors comes from the Sacramento Valley (Crase and DeHaven 1978). More than 88% of all winter food is plant material, primarily seeds of rice and other grains but also weed seeds. In winter, tricolors often associate with other blackbirds, but flocks as large as 15,000 individuals (almost all tricolors) may aggregate at one location and disperse to foraging sites. Some winter foraging flocks are composed almost exclusively of one sex (Hamilton and Beedy pers. obs.).

Blackbirds, including tricolors, have a long history of destructiveness to agricultural crops (Tyler 1907). They consume newly sprouted rice, ripening oats (Skorupa et al. 1980), barley, and rice seed heads (Hamilton pers. obs.). However, tricolors may also provide a considerable benefit as agents of insect control on a variety of agricultural lands (Skorupa et al. 1980).

Movements

DeHaven et al. (1975b) found that most tricolors do not nest at the sites where they hatched or where they had nested the year before. Of a total of 33,058 birds banded as nestlings, 33 were later shot as adults at breeding colonies. Only 13 birds had returned within 16 km of their natal colonies. Breeding colonies, however, often exhibit site fidelity and the same areas may be used year after year if they continue to provide essential resources, including adequate nesting sites, water, and suitable foraging habitats. Of the 72 total colonies located in 1991 through 1994, Hamilton et al. (1995) found 19 active in the same locations each year. An additional 11 colonies (15 % of the total) located in 1994 were active at the same locations in either 1992 or 1993, but not in both years.

Approximately 25 of the 75 total colonies that were active on April 26, 1997, were within 0.5 km of sites that were also used in 1994. This suggests that tricolors will continue to use the same nesting areas in subsequent years if favorable breeding and foraging habitats persist in those locations.

Spring Movements from Wintering Area

In late March and early April, tricolors vacate wintering areas in the Sacramento-San Joaquin River Delta and along coastal central California and arrive at breeding locations in Sacramento County and throughout the San Joaquin Valley (DeHaven et al. 1975b). A substantial, but as yet unmeasured, number of tricolors also winter in the northern San Joaquin Valley (Hamilton pers. obs.). Smaller colonies at foothill locations and those in the San Joaquin Valley are typically settled by early April (Hamilton et al. 1995).

Breeding Season Movements

During the breeding season, tricolors appear to exhibit itinerant breeding, moving to new breeding locations following previous nesting attempts elsewhere Hamilton (in prep). Most tricolors probably move from the San Joaquin Valley and Sacramento County to Colusa and Glenn Counties and elsewhere in the Sacramento Valley. While this trend was noted in all 4 years of an intensive study, colonies may form at any time during the breeding season (April- July) throughout the known breeding distribution of this species (Hamilton et al. 1995).

Postbreeding Season Movements

Long-term banding studies by DeHaven et al. (1975b) demonstrated a major postbreeding season movement into the Sacramento Valley from other breeding locales. At the time of their study, a major tricolor roost existed at Colusa National Wildlife Refuge (NWR). Large postbreeding roosts continue to develop in the Sacramento Valley from late summer (August) into fall (Hamilton pers. obs.).

Movements to Wintering Areas

The timing of major movements to wintering areas is unknown. Large foraging flocks can be seen in pastureland north of Rio Vista, Solano County, by late October (Beedy pers. obs.), and Hamilton (pers. obs.) has seen large flocks in the Sacramento and San Joaquin River Delta by late November. Wintering flocks numbering 12,000-14,000 assemble near dairies on the Point Reyes peninsula, Marin County, by mid-October (Stallcup pers. comm.).

Adult, Juvenile, and Nestling Mortality Factors

Direct Mortality

Until the 1930s market hunting was a major mortality factor when more than 300,000 tricolors and redwings were marketed {killed and sold} in the Sacramento Valley during a 5-year period (Neff 1937).

Starvation and Nestling Loss

At almost all sites in all years of a 3-year study, Hamilton et al. (1995) found that most broods were reduced by parents. Most eggs (three or four, sometimes five) hatch, but it is uncommon to find more than two or three nestlings in nests at fledging. This is because when food supplies are short parents choose not to feed all of their nestlings, thereby reducing the number of nestlings that survive to fledging. However, if abundant food is available, tricolors may raise as many as four young (Hamilton et al. 1995).

Predation

At present (i.e., 1985-1995), predation is a major cause of complete nesting failure at some colonies, especially in permanent Central Valley marshes (Beedy and Hayworth 1992, Hamilton et al. 1995). This factor is discussed in more detail under Section 4, "Population Threats and Impacts".

Weather Conditions

Severe or prolonged storms can cause high mortality among tricolor nestlings (Engler 1994, Hamilton et al. 1995, Cook 1996). Chilling of adult and nestling tricolors may account for some observations of reproductive failure (Hamilton et al. 1995), and adult females occasionally found dead on nests may be victims of hypothermia (Hamilton pers. obs.).

Brood Parasitism

Nestling mortality as a result of brown-headed cowbird *(Molothrus ater)* brood parasitism has not been reported. Most cowbird eggs laid in tricolor nests (N = 23 of 23) do not hatch (Hamilton et al. 1995).

3. Population Status And Trends

Historical Surveys

Historically, river systems flowing into the Central Valley overflowed to create extensive marshes that provided abundant breeding habitat for tricolors and a myriad of water birds. Of more than 4 million acres of wetlands that existed in the Central Valley in the 1850s however, only about 560,500 (about 14%) remained in 1939. An estimated 480,000 acres of freshwater emergent marshes (about 85% of the total

freshwater wetlands in 1939) were reduced by nearly 50% to about 243,000 acres by the mid-1980s (Frayer et al. 1989). Similarly, native perennial grasslands, prime tricolor foraging habitat, have been reduced by more than 99% in the Central Valley and surrounding foothills (Kreissman 1991).

There are few 19th-century accounts of tricolors and their extensive marshland and grassland habitats; therefore, their historical numbers and distribution are unknown. Heermann (1853) described fall flocks of thousands of tricolors in the Shasta region and saw a wintering flock in the Suisun Valley, Solano County, " . . . numbering so many thousands as to darken the sky for some distance by their masses". Belding (1890) observed an "immense" colony near Stockton, San Joaquin County. According to the notes of J. G. Cooper, the tricolor was "the most abundant species near San Diego and Los Angeles, and not rare at Santa Barbara" (Baird 1870). Unfortunately, only a few additional accounts of tricolors were published before 1900, and most of those provided brief descriptions of single colonies or the results of egg-collecting exlpeditions (e.g., Skirm 1884, Bendire 1885, Barlow 1900).

Published and unpublished accounts of historical tricolor breeding observations were summarized by Dawson (1923), Neff (1937), Grinnell and Miller (1944), and Beedy et al. (1991). Hamilton et al. (1995) also provided an update of historical tricolor observations. The first systematic, rangewide surveys of the tricolor's population status and distribution were conducted by Neff (1937, 1942). He observed as many as 736,500 adults per year (1934) in just eight counties. During a 5-year interval, he observed tricolors in 26 California counties. Historical breeding colonies also were described in Jackson and Klamath Counties, Oregon (Neff 1933, Richardson 1961). Egg sets collected in 1928 near Minden (Western Foundation of Vertebrate Zoology, Sumida pers. comm.) document the historical nesting of this species in western Nevada. Bryant (1889) described tricolors as common in the marshes of northwestern Baja California.

Neff (1937) summarized his observations of 252 California colonies. These surveys were conducted after most Central Valley wetlands were lost (Frayer et al. 1989, Wilen and Frayer 1990). Neff (1937) found many large colonies, including one in Glenn County, which contained more than 200,000 nests (about 300,000 adults) and covered more than 24 ha, and several others in Sacramento and Butte Counties that contained more than 100,000 nests (about 150,000 adults). Most large tricolor colonies observed by Neff (1937) were associated with freshwater emergent wetlands in rice-growing areas of California.

Orians (1961b) and Payne (1969) made detailed accounts of the ecology and breeding biology of tricolors. They observed colonies of up to 100,000 nests in Colusa, Yolo, and Yuba Counties, but did not attempt to survey the entire range of the species. For example, their surveys did not include major parts of the San Joaquin Valley or southern California, and they did not attempt to estimate the tricolor's overall population size.

DeHaven et al. (1975a) conducted population surveys and banding studies of tricolors in the Central Valley from 1969 through 1972. They concluded that the tricolor's geographic range and major breeding areas were unchanged in the 35 years since Neff's (1937) study. They observed an average of about 133,000 individuals per year, and estimated that the overall population size had declined by more than 50% since the 1930s. It is possible, however, that DeHaven et al. (1975a) underestimated the tricolor's total population size because they did not survey large portions of the southern San Joaquin Valley.

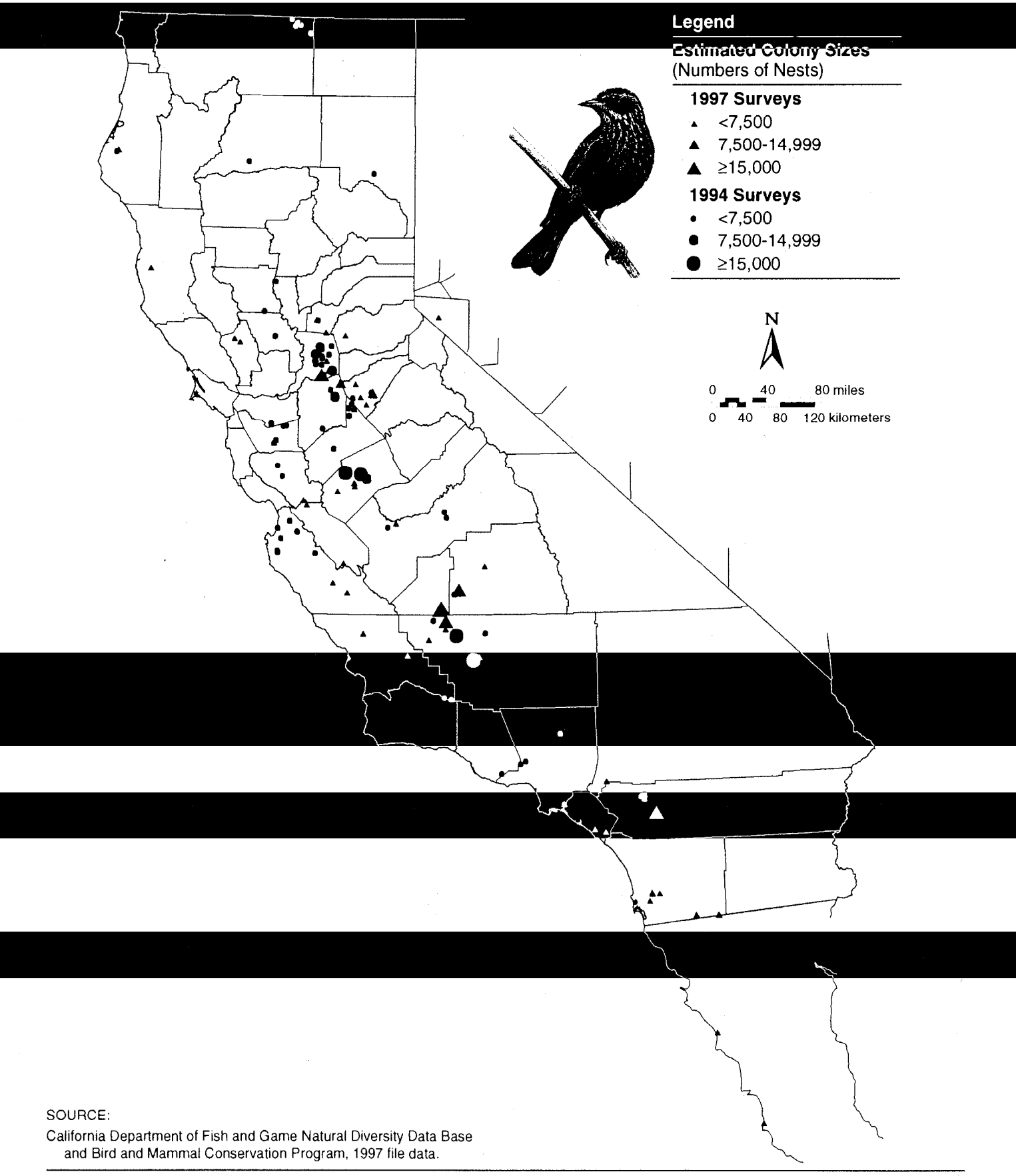
Recent Surveys

In a survey of tricolor distribution and abundance, Beedy et al. (1991) summarized all historical and recent breeding records, including unpublished reports and inventories. Based upon this information, and field surveys in the Sacramento Valley and portions of the San Joaquin Valley, they concluded that tricolor populations had declined further from those reported by DeHaven et al. (1975a), and that this decline was coincident with continuing losses of wetland habitats in the Central Valley. They reported a range of about 35,000-l 10,000 breeding adults per year in the 1980s with an approximate average of 52,000 breeding adults reported per year in that decade.

Population estimates by Beedy et al. (1991) were incomplete because they included only sporadic surveys in the southern San Joaquin Valley (i.e., south of Merced County), where several previously undescribed and very large (i.e., more than 30,000 nests) tricolor colonies were found in agricultural fields by Hamilton et al. (1995). Beedy et al. (1991) and Beedy and Hayworth (1992) made intensive surveys for tricolor colonies in Merced, Sacramento, San Joaquin, Yolo, Colusa, Yuba, Butte, and Glenn Counties but were unable to relocate many of the colonies reported there by Orians (1961b), Payne (1969), and DeHaven et al. (1975a). Perhaps the prolonged drought that prevailed in California during the mid- and late 1980s influenced the timing and occurrence of tricolors in the Sacramento Valley and the population estimates made there by Beedy et al. (1991).

From 1991 through 1994, USFWS and DFG cosponsored a multiyear survey and basic ecological investigations that included studying colony location and size, colony habitat characteristics, pre- and postsettlement behavior, and land ownership patterns; monitoring reproductive success and associations with habitat types; and development of a best estimate of the total population size and distribution. The survey area included the Sacramento Valley, San Joaquin Valley, and southern California. The most intensive effort was made in 1994 ,when Hamilton et al. (1995), documented 74 colonies in 32 California counties (Figure 1).

In an effort to continue monitoring the annual distribution and abundance of the tricolor population, a yearly, one-day, rangewide, volunteer survey (Volunteer Survey) was initiated in 1994. This survey is coordinated by the National Audubon Society Western Regional Office, DFG, and USFWS. Based on colony locations and the breeding



SOURCE:
California Department of Fish and Game Natural Diversity Data Base and Bird and Mammal Conservation Program, 1997 file data.

Jones & Stokes Associates, Inc.

Figure 1
Approximate Locations of Late April 1994 and 1997 Tricolored Blackbird Colonies Observed in California, Nevada, and Baja California

distribution summarized by Beedy et al. (1991) and Hamilton et al. (1995), experienced local volunteers are asked to visit all historical and recent tricolor breeding sites to describe the colonies' current status and numbers. Observers are also requested to drive all accessible roads in suitable tricolor habitats in their respective counties to attempt to locate previously undocumented colonies. Federal and state biologists continue to provide survey data for publicly owned lands and adjacent areas.

The 1994 Volunteer Survey was conducted during the week of April 23, 1994. Tricolors were observed in 32 California counties, and breeding colonies were found in 26 counties (Table 1). Ten historically occupied counties were not surveyed during this census, and six occupied (i.e., foraging flocks observed) counties apparently did not host breeding colonies at the time of the census. The largest colony was at San Luis NWR, Merced County, and contained approximately 70,000 nests; other large colonies were observed in Colusa and Tulare Counties (Table 2). All large (> 10,000) and many smaller colonies identified in the 1994 Volunteer Survey, and by federal and state biologists, were revisited by Hamilton et al. (1995) and were incorporated into the 1994 tricolor population estimate of approximately 369,400 (+/-15 %) total adults (Table 1).

The effectiveness of the 1994 Volunteer Survey was enhanced by the rangewide observations of Hamilton et al. (1995) in the 1992, 1993, and 1994 breeding seasons. In contrast, the 1995 and 1996 Volunteer Surveys did not include rangewide follow up surveys and large breeding colonies may have been overlooked. Surveys conducted during the week of April 22, 1995, located about 208,000 breeding tricolors in 20 counties. The two largest colonies, including about 25,300 nests in Tulare County and 18,000 nests in Merced County, were later destroyed during routine crop harvesting and land preparation activities (Hamilton pers. obs.). Another Volunteer Survey, conducted on May 22, 1995, located about 180,500 adult tricolors in only 17 counties; this census was less complete than the first two (Comrack pers. comm.).

A Volunteer Survey conducted on April 27, 1996 was even less complete than the 1995 surveys and detected only 56,890 tricolors in 21 counties. Volunteer Surveys were conducted on a single day, and some counties (e.g., Colusa, Kern and Kings) were surveyed incompletely, or not at all, in 1995 and 1996. Therefore, the relative survey effort and coverage of individual counties should be considered when interpreting the overall census results for any county or year (Comrack and Hunting pers. comms.). Years when intensive, follow-up surveys throughout the breeding season were not conducted should not be considered total population estimates for this species.

In 1997, DFG coordinated an intensive survey effort throughout California using the same coverage, methods and personnel as in 1994, when the last reliable population estimate was made. Participation in the April 26, 1997 Volunteer Survey was increased from previous years and most historically occupied counties received at least some coverage. Professional surveyors (Hamilton and Bowen) made repeated observational and nest-count surveys at most large colony sites that were observed in 1997.

The April 26, 1997 Volunteer and follow-up surveys documented approximately 232,960 (+/- 15 %) breeding and nonbreeding tricolors in 32 California counties; this total includes about 50 nonbreeding adults in Klamath County, Oregon, and 950 breeding adults in northwestern Baja California that were observed within one week of the survey (Table 1). This population estimate represents an overall decline of approximately 37% since 1994.

Population declines were most apparent in historical strongholds of the species' range in the Central Valley including Sacramento, Fresno, Kern, and Merced Counties.

During the entire 1997 breeding season, the two largest observed colonies were in Colusa and Tulare Counties (Table 2). The Colusa County colony was initiated in May, after the 1997 Volunteer Survey, and birds that probably nested elsewhere earlier in the season congregated at the Capitol Outing Club to form the largest colony reported in the 1997 breeding season. Birds continued to join the Tulare County colony after the 1997 Volunteer Survey. Other large colonies (i.e., more than 20,000 nests) were located in Kings and Riverside Counties during the 1997 breeding season. One striking exception to the trend of lower numbers in 1997 was a colony of about 23,300 nests at a recently created wetland (1994) near Hemet in Riverside County, which represented a dramatic increase in the Southern California total compared to the 1994 census.

Recent Population and Distribution Trends

Tricolors were characterized as " . . . sheerly and illogically erratic in (their) seasonal movements and activities" (Neff 1937). Fluctuations in the local abundance of tricolors have been interpreted as responses to local differences in insect abundance (Payne 1969, DeHaven et al. 1975a).

Despite their notably erratic behavior, recent intensive statewide surveys have identified several important distribution and population trends for tricolors.

- Statewide and local distribution varies from year to year, but annual trends in total population size are unknown (Neff 1937, DeHaven et al. 1975a, Hamilton et al. 1995).

- Reported tricolor colony size estimates in 1994 compared to the total count in 1997 (the only two years when survey efforts were sufficient to detect virtually all large colonies) indicated that the total tricolor population declined by about 37%, and the greatest declines occurred in Sacramento, Fresno, Kern, and Merced Counties, which hosted about 72% of the total adults observed in April 1994.

- In some portions of their range, tricolors have definitely declined or been eliminated, including local extirpation in portions of the Central Valley where

Table 1. Summary Comparison of Tricolored Blackbird Surveys
Conducted in Late April 1994 and 1997

	1994			1997		
Region and County	Breeding	Nonbreeding	Total	Breeding	Nonbreeding	Total
Sacramento Valley						
Colusa	25	2	27	100	4,075	4,175
El Dorado	0	0	0	200	0	200
Glenn	2,000	0	2,000	0	0	0
Placer	1,000	0	1,000	430	228	658
Sacramento	93,225	803	94,028	25,730	5,608	31,338
Sutter	35	200	235	0	0	0
Tehama	0	0	0	35	0	35
Yolo	400	75	475	200	0	200
Yuba	0	597	597	0	950	950
Subtotal	96,685	1,677	98,362	26,695	10,861	37,556
San Joaquin Valley						
Calaveras	0	0	0	8,253	60	8,313
Fresno	21,150	0	21,150	2,500	50	2,550
Kern	70,600	1,655	72,255	16,950	50	17,000
Kings	0	10,000	10,000	33,300	0	33,300
Merced	60,100	19,000	79,100	12,500	500	13,000
San Joaquin	13,750	2,228	15,978	11,750	107	11,857
Stanislaus	2,500	1,428	3,928	150	0	150
Tulare	50,000	0	50,000	53,500	2,000	55,500
Subtotal	218,100	34,311	252,411	138,903	2,767	141,670
San Francisco Bay and Delta						
Alameda	20	4	24	1,200	0	1,200
Contra Costa	400	0	400	0	0	0
Marin	0	400	400	0	0	0
Napa	11	0	11	350	50	400
Santa Clara	3,350	150	3,500	550	0	550
Solano	0	5	5	37	38	75
Subtotal	3,781	559	4,340	2,137	88	2,225
North Coast						
Humboldt	100	0	100	32	0	32
Lake	0	0	0	0	60	60
Mendocino	0	0	0	12	0	12
Sonoma	0	30	30	0	0	0
Subtotal	100	30	130	44	60	104

Table 1. Continued

Region and County	1994 Breeding	1994 Nonbreeding	1994 Total	1997 Breeding	1997 Nonbreeding	1997 Total
Central Coast						
Monterey	2,200	20	2,220	5,500	400	5,900
San Luis Obispo	0	0	0	660	0	660
Santa Barbara	2,000	0	2,000	0	0	0
San Benito	0	0	0	460	318	778
Subtotal	4,200	20	4,220	6,620	718	7,338
Southern California						
Los Angeles	755	60	815	430	0	430
Orange	1,000	34	1,034	231	0	231
Riverside	2,100	75	2,175	37,950	406	38,356
San Bernardino	0	0	0	300	0	300
San Diego	2,000	0	2,000	3,178	58	3,236
Ventura	90	0	90	0	0	0
Subtotal	5,945	169	6,114	42,089	464	42,553
Northeast Interior						
Lassen	0	0	0	0	6	6
Modoc	0	250	250	0	250	250
Shasta	2,500	85	2,585	0	0	0
Siskiyou	400	547	947	250	0	250
Subtotal	2,900	882	3,782	250	256	506
Oregon						
Klamath	0	0	0	0	50	50
Nevada						
Douglas	0	0	0	8	0	8
Mexico						
Baja California	0	0	0	950	0	950
Total	331,711	37,648	369,359	217,696	15,264	232,960

Note: California counties where found: 32 31

Percent change from 1994 to 1997: 36.9%

Table 2. The 10 Largest Tricolored Blackbird Colonies Documented in the Breeding Seasons of 1992, 1993 1994, and 1997

Site	County	Number of Nests
1992		
Lettuce I-5	Kings	43,333
Lurline CL-COC	Colusa	40,000
Lurline Ck-Harbison	Colusa	20,000
Rancho Seco	Sacramento	13,333
Bozick Ranch	Sacramento	13,333
Lost Hills	Kern	12,000
Kern NWR	Kern	10,000
Dairy	Tulare	8,000
San Luis NWR	Merced	6,667
Quarry	Glenn	4,000
1993		
Dairy	Tulare	32,000
Lettuce I-5	Kings	13,000
Cherokee	Butte	10,000
San Luis NWR	Merced	6,500
East Park	Colusa	6,000
Delevan NWR	Colusa	6,000
Botta	Sacramento	5,000
O'Neill Forebay	Merced	5,000
Moore	Sacramento	5,000
Campbell	Sacramento	4,667
1994		
San Luis NWR	Merced	70,000
Lurline CL-CCC	Colusa	33,333
Tulare	Tulare	33,333
Thunder Hill	Glenn	21,333
Mid-Am	Glenn	18,667
Wildwood	Kern	18,667
Bakersfield	Kern	16,666
Ranch Seco	Sacramento	13,333
Knox Road	Sacramento	10,000
Yuba	Yuba	9.000
1997		
Capitol Outing Club	Colusa	53,333
Toledo pit	Tulare	46,666
Tulare Lake	Kings	30,000
Road 120	Tulare	26,667
Hemet	Riverside	23,333
Kern NWR	Kern	10,000
Cherokee	Sacramento	10,000
Delevan NWR	Colusa	8,333
Highway 12	San Joaquin	6,667
East Hacienda	Kings	6,667

they were once abundant (e.g., Yolo County and large portions of southern Sacramento County), and many historical sites in coastal southern California counties (i.e., Santa Barbara, Ventura, Los Angeles, Orange, and San Diego Counties) (Beedy et al. 1991).

- Once abundant in coastal southern California (Baird 1870), tricolor populations there were reported to be less than 20,000 breeding adults in 1994 (Hamilton et al. 1995). In 1997, however,, an estimated 35,000 breeding adults were observed at a colony in Riverside County.

- In 1994, 71.5% of all tricolors observed throughout the breeding range nested in colonies of 10,000 or more birds, and at least 60% of all tricolors located in all years were found in the 10 largest colonies (Hamilton et al. 1995).

- In 1997, 75% of all adult tricolors counted in late April were in the largest 10 colonies.

- Rangewide surveys of both public and private properties found that 70% of all tricolored blackbird nests and. 86% of all foraging by nesting birds occurred on private agricultural land in 1994 (Hamilton et al. 1995).

The largest numbers of breeding tricolors have always been in the Central Valley, and in 1994 and 1997, more than 75 % of all observed breeding adults were found there (Table 1). Smaller colonies also occur in foothills throughout cismontane California (Hamilton et al. 1995), and locally in Oregon (i.e., Multnomah, Umatilla, Wheeler, Jackson [Beedy et al. 1991], and Klamath Counties [Follansbee and Mauser 1994]), and near Minden, Douglas County, Nevada in 1996 and 1997 (Chisholm pers. comm.). A few recent breeding colonies have ‘been observed at marshes near Rosario, northwestern Baja California (Anderson pers. comm., Hamilton pers. obs.).

In recent years and possibly also in the past, more than half of all observed nesting efforts by tricolors occurred in a few,, large colonies (Table 2). Concentrations of such a high proportion of the known population in a few breeding colonies increases the risk of continued population declines if major reproductive failures occur. Colonies situated in active agricultural fields are especially vulnerable to destruction when crops are harvested.

Recent Habitat Trends

In the absence of the vast marshlands and perennial grasslands that once characterized the Central Valley and foothills, most tricolors now breed and forage in a diversity of upland and agricultural habitats (DeHaven et al. 1975, Beedy et al. 1991). Today, the largest tricolor colonies (i.e., more than 30,000 nests) are often at dairy farms or associated with irrigated pastures, alfalfa, and silage fields on private lands in the San

Joaquin Valley and at rice ranches in the Sacramento Valley (DeHaven et al. 1975a, Hamilton et al. 1995).

Dairies and feedlots are a feature of many tricolor habitats in the San Joaquin Valley and in Sacramento County (Hamilton et al. 1995). This relationship was not mentioned in earlier accounts of the species (e.g., Neff 1937, Orians 1961a, 1961b; Payne 1969; DeHaven et al. 1975a, 1975b). The current dependence of tricolors upon dairies is of particular importance because, in 1994, 54.5 % of all observed tricolor nesting efforts were associated with dairies and their crops. In some places, the nesting substrate, water source, and foraging habitat are all contained on a single, large dairy operation (Hamilton pers. obs.).

In the 1930s Neff (1937) reported few tricolors nesting in Himalaya berry patches or other upland habitats. By 1994, however, 36% of all observed colonies and 23% of all individual tricolors nested in this plant (Hamilton et al. 1995). In the early 1990s 64% of all observed tricolor nesting was in exotic plants, including the most successful efforts (Hamilton et al. 1995, Cook 1996).

Himalaya berry patches associated with irrigated pastures, vernal pools, and grassland habitats in southern Sacramento County were an important stronghold of the tricolor's breeding population (Hamilton et al. 1.995). During the 1990s, vast areas of grassland and irrigated pastures in southern Sacramento County were converted to vineyards, an unsuitable tricolor foraging habitat. Land use changes from range lands to cotton, orchards, and vineyards continue to occur at a rapid pace throughout the Central Valley and elsewhere in California (Kreissman 1991). Widespread losses of historical tricolor breeding and foraging habitats may be responsible for the species' overall population decline since 1994.

4. Threats to Populations

Natural Factors

Predation

Predation is at present (i.e., 1985-1997) a major cause of complete nesting failure at some tricolor colonies (Hamilton et al. 1995, Beedy and Hayworth 1992). Historical accounts document the destruction of nesting colonies by a diversity of predators, including wolves *(Canis lupus)* and gray foxes *(Urocyon cinereoargenteus)* (Heermann 1853), skunks *(Mephitis sp.)* and possibly opossums *(Didelphis virginiana)* (Evermann 1919), Swainson's hawks *(Buteo swainsoni)*, black-crowned night-herons *(Nycticorax nycticorax)* (Mailliard 1900), Cooper's hawks *(Accipiter cooperii)*, burrowing owls

(Athene cunicularia), American crows *(Corvus brachyrhynchos),* raccoons *(Procyon lotor),* and mink *(Mustela vison)* (Nefff 1937).

More recently, Payne (1969) reported predation of tricolor nests by feral cats *(Felis catus),* northern harriers *(Circus cyaneus),* barn owls *(Tyto alba),* short-eared owls *(Asio flammeus),* and yellow-billed magpies *(Pica nuttallii).* Merlins *(Falco columbarius)* may associate with flocks of wintering tricolors and have been observed preying on adults (Manolis and Winter pers. comms.).

At some recent colonies, especially those in permanent freshwater marshes, black-crowned night-herons devastate nesting efforts and eliminate all or most nests (Hamilton et al. 1995, Mauser pers. comm.). At foothill locations and in the southern San Joaquin Valley, ravens *(Corvus corax)* may assemble and destroy all or almost all nests within colonies. In the Central Valley, coyotes *(Canis latrans)* are a major predator on tricolor colonies in terrestrial settings, especially in silage field colonies, but also in cattail colonies when water is withdrawn (Hamilton pers. obs.).

Responses of tricolors to predators differ strikingly from those of redwings nesting at the same locations. Redwings fly up to attack predators, especially crows, ravens and harriers, while tricolors usually do not. It is, thus, a common sight to see a raven pair pass high over a tricolor colony being actively pursued by a few redwings, while several thousand nesting tricolors at the same location ignore them (Hamilton pers. obs.).

Weather Conditions

Weather conditions were discussed under "Adult, Juvenile, and Nestling Mortality Factors".

Anthropogenic Factors

Habitat Loss and Alteration

Virtually all alluvial soils in the Central Valley once supported riparian woodlands, marshlands, or perennial grasslands, but they have now been converted by agriculture and urbanization (Frayer et al. 1989, Wilen and Frayer 1990). Many former agricultural areas within the historical. range of the tricolor are now being urbanized. Many tricolors in Sacramento County forage in the extensive, ungrazed annual grasslands associated with rural subdivisions (Cook pers. comm.). This transitional land use currently provides suitable habitat for tricolors that will be largely eliminated as current land conversion patterns continue.

In some places, most historical tricolor breeding and foraging habitats have been eliminated and there is currently little or no breeding effort where there once were

large colonies (Orians 1961b, Beedy et al. 1991). Elsewhere, tricolors have shifted from cattails as a primary nesting substrate (Neff 1937) to Himalaya berries (DeHaven 1975a) and more recently to cereal crops and barley silage (Hamilton et al. 1995). Nests and nest contents in cereal crops and silage are often destroyed by agricultural operations (Hamilton et al. 1995). Harvesting of silage and plowing of weedy fields are: currently the most common reasons tricolor nesting colonies are destroyed on agricultural lands.

Some habitats are sources (Pulliam 1988)(e.g., Himalaya berries) of successful tricolor fledging while others are often sinks (e.g., many permanent marshes and most silage fields near dairies), consuming reproductive effort without producing enough fledglings to compensate for losses from predation and crop harvesting (Hamilton et al. 1995).

Prospects for successful tricolor nesting in dairy settings without active management are low, but could be enhanced by communication and negotiation with sympathetic landowners. Long-term maintenance of tricolor populations in agricultural areas, such as dairies and rice fields could be enhanced by establishment of small cattail ponds to provide more secure nesting habitats in areas where large colonies are often destroyed during routine harvesting operations. The costs and benefits to private landowners and state and federal agencies should be evaluated so that viable alternate nesting habitats can be restored and large-scale nesting failures can be reduced.

Poisoning

McCabe (1932) described the strychnine poisoning of 30,000 breeding tricolors as part of an agricultural experiment, Poisoning to regulate numbers of blackbirds preying upon crops in California, especially rice, was considered a major source of adult mortality by Neff (1942). This practice continued until the 1960s and thousands of tricolors and other blackbirds were exterminated to control damage to rice crops in the Central Valley. However, improved harvesting methods, earlier ripening rice varieties, and fewer blackbirds have resulted in few recent reports of blackbird crop depredation, and no control programs are currently operating (Clark pers. comm.).

Contaminants and Pollution

During 1986, Beedy and Hayworth (1992) observed a complete nesting failure of a large (about 47,000 breeding adults) tricolor colony at Kesterson Reservoir, Merced County. External examinations of dead nestlings collected from roads surrounding the reservoir revealed that two of the 10 specimens had club feet (Grau pers. comm.); similar deformities were found for shorebirds and other water birds that were also collected at Kesterson Reservoir (Ohlendorf et al. 1986). Pathological examinations of the tricolor nestlings revealed some evidence of heart muscle degeneration, and selenium toxicosis was suspected as the cause of death (Stroud pers. comm.).

Lalboratory results from composite liver samples from dead tricolor nestlings from Kesterson Reservoir revealed that they had significantly higher concentrations of selenium than livers collected from redwing nestlings collected in an uncontaminated

area at Merced NWR (Paveglio pers. comm.). Laboratory feeding trials of two tricolor nestlings revealed that they did not live beyond 4 days on a diet containing 100 parts per million selenium (dry weight), but a selenium dose-response relationship has not been developed for tricolors or other passerine birds (Grau et al. 1987).

Hamilton (pers. obs.) observed a colony sprayed by mosquito abatement operators in Kern County, and all sprayed eggs failed to hatch. Hosea (1986) attributed the loss of at least two tricolor colonies to aerial herbicide applications. The relationship of pesticides to tricolor reproduction is poorly known. An improved understanding of the potential for chemically induced mortality of this species could be gained through laboratory testing of dead adults, nestlings, and failed eggs. Nevertheless, at the present time (1997) chemical threats to tricolors are a far less serious problem than are habitat losses.

Human Disturbance

Tricolors are sensitive to human disturbance of active nesting colonies and casual entry into colonies should be avoided. Effective management and scientific studies, however, demand careful entry into active colonies to make accurate assessments of nesting chronology and reproductive success. To avoid unnecessary disturbance of the nesting birds, however, human observers should not remain in active colonies for extended periods (i.e., several hours), and they should avoid creating numerous trails or disturbing the vegetation near dense nesting clusters. Hosea (pers. comm.) reported that conducting daylong nest censuses caused abandonment of an entire colony within 2 days. Similarly, Beedy and Haywortlh (1992) observed that they caused localized abandonment of active nests in Himalaya berries and cattails by entering colonies for several hours to collect eggs for contaminant analyses. They also observed that the trails they created through the cattails facilitated access to the colony by avian and mammalian predators, especially raccoons. Hamilton et al. (1995), however, did not observe any nest abandonment in a prickly lettuce colony after making repeated, short-term entries into active colonies, including weighing of all chicks in selected nests four times (N = 22 of 23 monitored nests were successful). In general, periodic, careful entry into colonies by experienced research personnel does not cause widespread nesting abandonment.

5. Summary of Current Conservaltion Actions

Recent Management Actions

In 1991, the Yolo Audubon Society submitted a petition to the California Fish and Game Commission to list this species as endangered under the state Endangered Species Act. This petition was based on the findings of Beedy et al. (1991). The petition was

withdrawn in 1992 following two breeding seasons of intensive fieldwork by Hamilton et al. (1995) and their estimates of the size of the total tricolor breeding population.

After the petition was withdrawn, DFG and USFWS continued monitoring tricolor populations. Monitoring activities included partial DFG and USFWS funding of surveys and ecological investigations conducted by Hamilton et al. (1995) and organizing the statewide Volunteer Survey (1994-1996).

Management on Public Lands

Management actions on public lands have focused primarily on basic protection, reduction of disturbance, and water management. NWR staff routinely monitor tricolor breeding colonies and provide protection for these sites from disturbance or habitat loss. Active management of water levels to maintain stable conditions for breeding colonies during the breeding season has been implemented on Kern NWR, San Luis NWR Complex, and Sacramento NWR Complex.

In 1994, a large nesting colony (about 100,000 adults) was established in a silage field on newly acquired lands on San Luis NWR. The former land owner retained temporary grazing/farming rights and cooperated with refuge staff to delay silage harvest until after the colony had fledged. An estimated 47,000 young successfully fledged from this colony (Hamilton et al. 1995). Historically, active management on public lands has also included the hazing of colonies during initial settlement stages to decrease the chances of colony establishment on contaminated lands at Kesterson Reservoir (Zahm pers. comm.).

Management on Private Lands

During 1993 and 1994, several large tricolor colonies were found in silage fields associated with dairies in Kings, Fresno, and Tulare Counties (Hamilton et al. 1995). As a result of the efforts of DFG and USFWS, portions of these crops were purchased to preserve the largest colonies in 1993 and 1994. Hamilton et al. (1995) estimated that direct intervention and voluntary participation by land owners (e.g., delaying harvest to protect active nesting colonies) resulted in the addition of an estimated 37,000 and 44,000 adult tricolors to the 1994 and 1995 breeding season populations, respectively. USFWS and DFG, however, do not consider crop purchases or reimbursements for delayed harvest to be a feasible long-term solution for tricolor habitat management on private agricultural lands (Zimmerman and Hunting pers. comms).

Two large silage field colonies (27,000 and 38,000 adults) were destroyed during harvesting in 1995 and another colony of about 40,000 adults was destroyed in 1997. Insufficient funds exist at either the state or federal levels, however, to make crop

purchases an effective long-term strategy for preserving tricolor colonies in agricultural settings. In the absence of such management efforts, large colonies in active agricultural fields may result in lost tricolor reproductive effort.

Some private landowners are taking advantage of opportunities to create tricolor habitats on private agricultural lands. For example, in 1995, Westlake Farms (Kings County) attracted about 7,000 adult tricolors to a restored marsh where they nested successfully (Shelton pers. comm.). 'The owner and his agent agreed to continue management for tricolors in spite of substantial losses of nearby barley crops to pre- and postbreeding adults. Management actions included predator control (coyotes and skunks) and creation of deep water canals to reduce the impact of mammalian predators.

6. Conservation and Management Recommendations

Conservation Goals and Objectives

The overall goal for the conservation of the tricolored blackbird is to maintain viable, self-sustaining populations distributed throughout the current range of the species. This will require a coordinated mix of management, monitoring, and research activities implemented on both public and private lands. The conservation objectives presented below highlight needs and opportunities on both public and private lands and emphasize a coordinated approach to management of tricolors and their habitats. The primary conservation objectives for tricolored blackbirds are to:

- avoid losses of tricolor colonies and their reproductive effort throughout their range,
- increase the breeding opportunities on suitable public lands and on private lands managed for this species,
- enhance public awareness and support for protection of this unique species, and
- minimize losses of important foraging habitat for both nesting and wintering populations.

In recognition of the differing roles and opportunities that public and private land bases may serve in tricolor conservation, management recommendations have been developed for both public and private lands as a comprehensive strategy to meet the overall goals and objectives for tricolor conservation.

Management Recommendations for Public Lands

Federal and State Wildlife Refuges and Other Public lands

Public land bases, particularly those lands specifically designated for wildlife resources as state or federal wildlife refuges, can serve a specific and unique role in the conservation and management of tricolors. The focus of tricolor management on public lands should be to:

- maintain and enhance existing habitat suitable for nesting and foraging tricolors,
- create additional habitat to support nesting and foraging tricolors to increase the potential carrying capacity of public lands for this species, and
- improve reproductive success of colonies located on public lands.

Habitat Protection and Maintenance

Protection and enhancement of tricolor colonies located on state or federal refuge lands is primarily focused on water management because most of these colonies are located in marshlands. Once a tricolor colony is detected, it should be fully protected from rising or fluctuating water levels to avoid flooding nests or providing easy access to mammalian predators, such as raccoons and coyotes. Colonies should be protected from human intrusion and disturbance; however, inspection of colonies can provide important information for water management. The methods described by Hamilton et al. (1995) for entering colonies and assessing reproductive stages and success are recommended when entry into active colonies is desirable for management purposes (Appendix A).

Carrying Capacity

Breeding tricolors need to be lured or deflected away from dairies and other active agricultural operations to protected habitats where they are more likely to succeed. Increasing the carrying capacity of public land bases for tricolors will require site specific assessments of current conditions and the identification of limiting factors. Potential tricolor habitat areas can be enhanced by providing missing elements in places where only parts of their habitat requirements are met. Of the three major tricolor breeding requirements (i.e., water, foraging habitat, and nesting substrate), nesting halbitat is the easiest to create. However, nesting habitat is useful only if a water source, such as a canal, wetland, river, or lake, is present within a few hundred meters and suitable foraging habitat is within about 5 km, and preferably closer. On some refuges, it may be desirable to promote the growth of nettles, California blackberries, and other naturally armored native plants to provide secure nesting sites for tricolors. Incorporating these plantings into ongoing riparian restoration projects is an effective strategy for increasing nesting habitat adjacent to suitable water sources. Thistles and

mustard on levees and elsewhere may also provide productive habitat for breeding colonies. If occupied by nesting tricolors, mowing or spraying of this vegetation on levees or other upland areas should be deferred until after the breeding season.

The management of foraging areas on private lands may require basic protection through the use of conservation, agricultural, or farming easements. Grazing, mowing, and other management practices influencing vegetation characteristics should incorporate tricolor needs.

Opportunities exist to create tricolor habitat on other public land bases, especially along California Department of Transportation (Caltrans) and Department of Water Resources rights-of-way. Possibilities for such development include establishment of cattail and blackberry copses on public properties near sources of water, such as irrigation ponds. Other possibilities for creating off-refuge colony sites on public lands include water agency corridors and reservoirs. These habitats may be especially promising because they often provide access to sources of open water. Irrigation canals are the water source for some of the largest tricolor colonies (Hamilton et al. 1995).

Reproductive Success

Recent monitoring efforts have documented poor reproductive success in the majority of colonies using large cattail marshes for nesting because of heavy losses to predators, especially black-crowned night-herons (Hamilton et al. 1995). However, tricolors may nest successfully in some small cattail marshes because these areas appear to support smaller populations of black-crowned night-herons and other predators. Intensive demographic monitoring and research are needed to determine if there are differences in reproductive success of cattail colonies based on wetland sizes and spatial relationships with other wetlands. Results of these investigations will yield information valuable to developing effective management strategies for increasing tricolor reproductive capabilities in cattail colonies.

Management Recommendation for Private Lands

The focus of tricolor management on private lands should be to:

- encourage private landowners to protect active tricolor breeding colonies;
- encourage consideration of tricolor nesting and foraging requirements in the creation of mitigation wetlands; and

- include tricolor population and habitat conservation actions in developing Habitat Conservation Plans (HCPs), other multispecies conservation plans, and ongoing private land habitat conservation programs within the range of this species.

Habitat Protection

State and federal refuge lands cannot accommodate the 1997 tricolor breeding population of about 230,000 adults. Protecting colony sites on private lands should be encouraged where possible because most of the landscape settled by tricolors is privately owned (Hamilton et al. 1995). Destruction of large colonies of this endemic species could lead to global population declines, especially if current source habitats are lost. Breeding colonies, whether on public or private land, are protected under the authorities of the Migratory Bird Treaty Act. Destruction of major colonies conflicts with overall DFG and USFWS obligations and policies to protect native birds and sends an undesirable message to the public about the value of nongame wildlife. Priority should be placed on identifying the largest colonies each year, and identifying mechanisms for protecting nesting and foraging habitats suitable for successful tricolor reproduction. Possible approaches for protecting active colonies threatened by crop harvesting on private lands include contacts with sympathetic landowners and conservation easements.

Habitat Conservation Planning Efforts

Federal multispecies HCPs and state Natural Community Conservation plans are under development throughout the core breeding distribution of tricolors in the Central Valley and southern California. The USFWS is also exploring possible "safe harbor" programs for species protection on private lands. These and similar programs that encourage, coordinate, and implement wildlife conservation on private land bases should include conservation measures for tricolors, especially in rapidly developing areas of the Central Valley and southern California. Possible tricolor conservation strategies include developing nesting areas, managing foraging areas to provide quality forage, and deferring harvest of grain crops harboring nesting colonies until after the breeding season. These programs offer promising cooperative opportunities to incorporate habitat conservation measures for tricolors on private lands throughout their core breeding range.

Public and private partnership programs for wetland habitat enhancement offer additional opportunities to actively manage for tricolor populations. Opportunities to restore marshlands on private lands in foothills surrounding the Central Valley and in southern California are of particular interest because these sites are often successful and may contribute significantly to the recruitment of young tricolors into the population (Hamilton et al. 1995).

7. Monitoring Recommendations

Effective monitoring programs are essential to conserving the global population of tricolors. Information resulting from monitoring programs can serve to identify and prioritize management and research needs and to meet agency mandates to track the status and trends of this unique species. The monitoring recommendations presented have been developed to meet the following goals:

- track the annual distribution and long-term population trends of the tricolor;
- monitor reproductive success to more effectively assess population viability and to determine habitat characteristics associated with nesting success;
- identify threats to the population;
- identify and prioritize management and research needs; and
- enhance public awareness, knowledge, and support for tricolor conservation.

Monitoring recommendations are presented in a hierarchical order beginning with Level 1 programs designed to maintain a baseline of information sufficient to track the general occurrence and distribution of tricolors on an annual basis. Level 2 monitoring builds upon this baseline to track long-term trends in abundance and reproductive success of selected colonies. Level 3 monitoring targets demographic parameters, such as reproductive success, which can provide information critical to developing and implementing effective management programs. Various aspects of this tiered monitoring approach can and should occur concurrently. Monitoring results may also compliment or directly support recommended research activities.

Because the tricolor population is distributed across the landscape in various habitats and land ownerships, public and private partnerships to fund and implement these activities will be crucial. The foundation for such partnerships has already been established with past monitoring programs and should be fostered to continue and strengthen ongoing cooperative efforts.

Level I Monitoring

The primary objectives of Level 1 baseline monitoring are to:

- document the presence, absence, and distribution of tricolor breeding colonies throughout their historic range;
- estimate the size (numbers of birds) of selected colonies; and

- heighten public awareness of this species, its status, and conservation issues.

Methods

The Volunteer Survey initiated in 1994 provides useful information on tricolor distribution and is the recommended survey method for Level 1 monitoring. Implemented on an annual basis, participants are requested to visit previously documented colony locations within their county and are encouraged to explore other potentially suitable habitat areas. Standard survey forms and instructions (Appendices B and C) are provided to document the exact colony location, acreage, vegetative substrate, breeding behavior (e.g., singing males, food carrying, and presence of fledglings), and total number of adults as estimated from a recommended distance of 25 meters from the nesting area. Repeat visits later in the breeding season are recommended to determine the fate of active colonies. Entry into active colonies is discouraged. Colonies located on National Wildlife Refuges and those monitored by experienced, skilled observers serve as a core subset of sites for more accurately estimating colony size (Level 2 and 3 monitoring).

The Volunteer Surveys will be especially valuable if they are conducted over a period of years, using consistent methods and an increasing core of experienced observers. New breeding localities and lost habitats will be documented and public awareness and skills in species and habitat identification will be enhanced over time.

Survey Area

The Central Valley represents the core survey area, but volunteers are also solicited to survey documented sites throughout the historic range of the species, including valley foothill areas, southern California, and portions of northern California.

Frequency and Timing

The surveys are conducted annually during the last weekend in April or the first weekend in May. Follow-up surveys throughout the breeding season are encouraged.

Coordination

Survey forms and general instructions are currently distributed by DFG and National Audubon Society. DFG has served as the recipient of survey results and compiles summaries of data, the extent of geographic coverage, and the survey effort compared to prior years. A designated coordinator to contact potential surveyors, send out mailings, and assign coverage greatly enhances the success of the Volunteer Surveys.

Training

A workshop for volunteers and other wildlife biologists interested in this species should be conducted in the breeding season to improve the overall quality of the data gathered

during the Volunteer Surveys. This workshop should include field sessions to improve skills in species identification, colony detection and status, estimating colony sizes, and the identification of creches.

Level II Monitoring

The Volunteer Survey (Level I Monitoring) provides useful information on tricolor distribution, but it does not produce reliable estimates of annual trends in global abundance. The objectives of Level II Monitoring are to:

- document the distribution and abundance trends of the tricolor breeding population over time, and
- monitor a subset of the population to assess reproductive success relative to habitat type.

Methods

The best way to monitor global tricolor population trends is to conduct intensive, Periodic Rangewide Surveys during the breeding season; these surveys were sponsored by USFWS and DFG in 1992, 1994, and 1997 and conducted in those years by Hamilton et al. (1995). A core crew of at least three experienced surveyors is trained to: 1) detect colonies, 2) accurately estimate colony size, 3) monitor colony attendance, 4) measure reproductive success within a selected subset of the population, and 5) estimate the size of the breeding population over the course of the survey period.

Calony locations, size, and persistence are documented throughout the breeding range using a series of repeated, visual estimates over the course of consecutive breeding seasons between the core dates of April 10 and June 15 (Hamilton 1995). Intensive data collection is implemented on selected colonies to more accurately estimate numbers and to monitor reproductive success. This subset typically includes the largest known colonies (Table 2).

Nest transects are conducted after the breeding season through these selected colonies to provide more precise estimates of colony size. The size of a colony can be determined after the breeding season by mapping the outline of the colony and establishing transects through the periphery and center. A 1.5 meter stick held horizontally while walking transects is a useful aid in counting nests, and a measuring wheel or tape run along the outside of the colony can be used to estimate the area of a colony, as described by Hamilton et al. (1995).

Reproductive success is measured by repeat visits to active nests during the nesting period to document egg laying, incubation, hatching, and fledging. Colonies selected for demographic monitoring may vary depending on where the largest colonies occur

and specific, additional objectives, such as correlating reproductive success to selected habitat types or specific geographic areas of interest within the range of the species. Following completion of the three-year Periodic Rangewide Survey, an annual estimate of the global population is calculated and an overall estimate of the population size, distribution, and status is determined.

Survey Area

The Periodic Rangewide Survey includes systematic, repeated coverage of all historically occupied counties in California (with emphasis on the Central Valley), Oregon, and Baja California. Historical nesting sites and areas of potential habitat are searched for breeding populations.

Frequency and Timing

Rangewide surveys should be conducted for at least three consecutive years so that variations in tricolor populations can be identified and to avoid misinterpretation of naturally occurring fluctuations in annual distribution and abundance. Such surveys should be conducted as frequently as possible and not less than once every 5 years. The survey period begins in April and continues until the culmination of the breeding season. The first Periodic Rangewide Survey was conducted from 1991-1994 by Hamilton et al. (1995) and a similar survey was done in 1997. It would be desirable to continue this survey for at least 2 more years to substantiate the population decline indicated since the 1994 survey. Thus, the next Periodic Rangewide Survey should be initiated no later than 2002.

Coordination

In 1991-1997, surveys were jointly sponsored by USFWS and DFG and surveys were implemented by a contract field crew, which included an experienced supervisor and two field biologists. Agency biologists and managers implemented portions of the monitoring on public lands. Public agency support and private partnerships are encouraged to meet the need for implementing future Periodic Rangewide Surveys.

Level III Monitoring

The objective of Level III monitoring is to collect demographic data to more effectively assess population viability and to examine reproductive success in relation to habitat associations and management practices. This information builds upon and further supplements the data accumulated with the annual Volunteer Survey and the Periodic Rangewide Survey. Demographic data will be used to identify population and habitat management needs vital to the conservation of the species.

Methods

At selected colonies, experienced observers examine the contents of a representative subsample of nests repeatedly during the season to monitor nesting success. Methods are described in Hamilton et al. (1995) and Follansbee et al (1994). Such entries should be made only by skilled, experienced observers and should be completed late in the nesting cycle (after egg laying) but before average hatchling age of 8 days to avoid inducing preflight nestlings from jumping from their nests. Premature departure from the nest may result in death from drowning, predation, or exposure. After breeding is colmpleted, nest count transects should be conducted through the entire colony to more accurately estimate colony size.

Survey Area

The largest, active colonies located on public lands are the priority for monitoring reproductive success on an annual basis. Because monitoring reproductive success requires access, repeated entries into breeding colonies, and strict adherence to protocols, colonies located on public lands are often the most suitable sites for monitoring reproductive success. However, these colonies may not reflect the full array of habitat types, size, or geographic distribution of active colonies during the breeding season. On private land bases, the largest colonies are the priority for monitoring reproductive success, but monitoring will depend on landowner permission to access these sites. Colony locations and sizes reported in the Volunteer Survey effort will help to identify the larger colonies.

Frequency and Timing

Demographic monitoring is both time consuming and expensive. Priorities regarding the location and frequency of this activity will need to be assessed annually. Findings of Level I and II monitoring efforts in previous years and site specific management needs are factors to consider when identifying and prioritizing demographic monitoring needs. When implemented, monitoring should be initiated at the onset of colony establishment and should continue until the colony disperses. Monitoring reproductive success typically requires a multiyear effort to ensure an adequate and representative sample to assist in interpreting the results in the context of changes in weather and other factors that vary annually.

Coordination

Results of the annual Level I Volunteer Survey summarized by DFG will guide the priorities for monitoring reproductive success. Communication among observers, public land managers, USFWS, and the DFG - Bird and Mammal Conservation Program during the breeding season is important to identify large colony sites early in the breeding season. Biologists and managers on public lands should maintain records of demographic monitoring and provide copies to DFG - Bird and Mammal

Conservation Program, Sacramento, California and USFWS Regional Nongame Bird Coordinator, Portland Oregon.

8. Research Recommendations

Much of the tricolor life history information necessary to effectively manage this species is either unknown or unreported (Hamilton et al. 1995). Key unreported information includes habitat selection mechanisms; the confirmation and role of itinerant breeding; predation response behaviors and relationships to predators; the relationship of wetland size, type and quality to reproductive success; analysis of brood reduction mechanisms; and the pattern of male participation in provisioning. An intensive study of the breeding biology at some locations, including the use of blinds, video cameras, and other monitoring equipment could greatly enhance our understanding of this species and could facilitate management decisions on public and private lands. In addition to intensive! life history studies, a number of specific research needs are presented below in priority order.

Investigate Land Uses Near Colonies

The nesting substrate required by nesting colonies has been well defined, and such substrates could relatively easily be established in many areas not currently used by tricolors. However, the necessary components of foraging habitat that nesting colonies rely upon are less well understood. The success of new habitat for breeding tricolors will depend on the availability of both the appropriate nesting and foraging habitats. In order to gain a better understanding of the habitat requirements of nesting tricolors, a study should be conducted that would measure the time and space use by tricolors of the various habitats surrounding existing successful nesting colonies. This study should also measure the reproductive success of the observed colonies. Such a study would require the evaluation of dozens of private and public properties where nesting colonies currently exist.

Evaluate Predator - Prey Relationships

The interactions between tricolors and other predators, such as coyotes, ravens, and black-crowned night-herons, require further study and evaluation. The goal is to identify management practices to minimize predation at breeding colonies. In particular, black-crowned night-herons are major predators upon tricolor colonies, especially in the large Central Valley cattail marshes. Such studies should include comparisons of predation and reproductive success of colonies located in large cattail wetland systems and those located in smaller, isolated wetlands.

Itinerant Breeding Investigations

The goal of these studies should be to confirm and further evaluate itinerant breeding and to more closely evaluate tricolor movements through the breeding season. Confirmation of itinerant breeding and the role of such a reproductive strategy is a key factor in evaluating the long-term viability of this population. This is particularly significant in consideration of the documented failures and losses of large nesting colonies each year early in the breeding season. The capability of these colonies to reestablish and successfully reproduce may significantly influence estimates of reproductive success and population viability.

Inventory and Analyze Peripheral Colonies

Many small colonies inhabit isolated sites along the coast and in the foothills on both sides of the Central Valley; similar colonies are also present in Oregon. Although the total number of individuals inhabiting these colonies is small, they are of great value for several reasons.

- These colonies reliably produce several thousand tricolors annually (e.g., colonies in southern Monterey County and New Cuyama, San Luis Obispo County). Some of these colonies are highly successful, presumably because the suitable nesting areas are small and densities per unit of foraging area are low.

- Some peripheral colonies are the only tricolors found in substantial geographic areas (e.g., Fortuna, Humboldt County and Fort Ross, Mendocino County).

- Knowledge of the existence of small colonies provides valuable educational opportunities and may enhance the support base for tricolor conservation. Some of these colonies are in spectacular settings and the behavior of these birds is of great interest to local residents. These sites include the late-season colony near Drake's Beach, Point Reyes National Seashore, Marin County; the Bitter Creek NWR colonies, Kern County; the Kern River headwaters colonies near Lake Isabella, Kern County; eastern Sacramento County colonies; Jacumba, San Diego County; the gateway to Laguna Seca, Monterey County; and several other sites.

These sites offer unique opportunities to study colony and foraging base habitat features associated with successful breeding colonies. Reproductive success and other aspects of breeding ecology and behavior could also be intensively investigated on these sites when access is given by landowners.

Demographic Monitoring

Tricolors are readily captured when traps are baited with decoy birds, such as blackbirds and starlings (DeHaven pers. comm.). A routine banding operation continued for several years could be used to establish the age structure and annual survivorship of the tricolor population. A demographic study also would enhance prospects for monitoring population changes and for identifying population regulation mechanisms. It is possible that experienced volunteers could be identified who would implement aspects of this project.

Determine the Taxonomic Status of Southern California Tricolor Populations

All returns of tricolors banded in southern California were recovered there (Neff 1942 [N = 3], DeHaven and Neff 1973 [N= l0]). None of the birds banded in the Central Valley, and eventually recovered, were found in southern California (0 of 136). Although these returns are represented by small sample sizes, they support the hypothesis that tricolors may consist of two separate and largely distinct metapopulations. Genetic analyses of the two metapopulations, possibly including DNA hybridization studies, should be undertaken. These results could contribute to the determination of the population status of tricolors in southern California. Even if such studies revealed no genetically distinct populations, however, the remaining tricolor breeding colonies in southern California should be preserved.

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Appendix A. General Guidelines for locating and Monitoring Tricolored Blackbird Colonies

Appendix A

General Guidelines For Locating And Monitoring Tricolored Blackbird Colonies

Several factors should be considered for all levels of tricolor monitoring:

- Observers can often identify the location of colonies when tricolors are provisioning nestlings by observing the flight direction of adults with food in their bills. An appropriate change in position by the observer will give a second azimuth, permitting approximate triangulation of the colony location.

- Estimates of numbers depend on the stage of a colony. Settling colonies often attract far more males than actually remain to breed and estimates of numbers may be inflated early in the season. Estimates should be verified by nest counts after the breeding season.

- It is useful for several observers to estimate the size of colonies that will be closely measured after the breeding season so that estimation skills can be developed.

- The size of a colony can be determined after the breeding season by mapping the outline of the colony and establishing walking transects through the peripheries and center. A l.5-meter stick held horizontally can be used as a useful aid to counting nests. A measuring wheel or tape run along the outside of the colony can be used to estimate the area of a colony (Hamilton et al. 1995).

- To distinguish between creches and colonies, it is necessary either to know that a collection of birds is a nesting colony from observation of breeding behavior (e.g., male song or female nest building) or to enter a creche or colony to search for nests. Creches account for some observations of smaller colonies and may distort reports of overall numbers of nesting tricolors. Creches often occur in unsuitable tricolor nesting habitats, such as oleanders, black walnut, and fig trees, and small, linear patches of cattails and other emergent vegetation (Hamilton pers. obs.).

- Establishing a driving survey route to annually monitor historically known colonies in a given local area of interest can be a useful adjunct to the Volunteer and Periodic Rangewide Surveys. This persistent observation of targeted sites over a period of years can result in trends in distribution and abundance within the survey area. Driving routes linking documented colony sites could be established and new colonies incorporated as

they are observed or reported. To implement this more intensive level of monitoring, routes should be driven at least monthly from April 10 through June 15 to ensure adequate documentation of colony establishment, early failures, and successful nesting attempts.

Appendix B. 1997 Statewide Tricolored Blackbird Survey Guidelines and Instructions for Completing Survey Forms

1997 STATEWIDE TRICOLORED BLACKBIRD SURVEY
SURVEY GUIDELINES AND INSTRUCTIONS FOR COMPLETING SURVEY FORMS

Survey Purpose

The primary purpose of the 1997 statewide survey is to determine the number of active tricolored blackbird *(Agelaius tricolor)* colonies and each colonies location. Although we recognize that April 26-27 may precede establishment of nesting colonies in some areas (e.g., Sacramento valley) we have selected these dates to maximize the likelihood of detecting nesting colonies in most of the state. Because some birds may have completed a successful nesting cycle and others may have experienced a nest failure or are beginning a re-nesting attempt, we expect volunteers to observe colonies in all stages of the nesting process including birds which are not associated with colonies or in the early phase of colony development.

Survey Dates

We selected the April 26-27 dates as a focus for the volunteer efforts because we learned, as a result of the 1994 and 1995 efforts, that tricolored blackbirds are itinerant breeders (i.e., many individuals nest at more than one location during the breeding season) and that following loss of a nest to predation or other causes, adults may re-nest, either at the same location or in a new colony, within 10 days. Therefore, to avoid duplicate counts of breeding colonies, surveys are limited to a single two-day period. If you are unable to conduct surveys on April 26-27 but can survey within about one week of these dates, please clearly indicate the dates the colonies were surveyed.

To determine nest success and historic colony site use, however, researchers will attempt to gather data on nesting colonies throughout the breeding season. Therefore, we encourage reports from volunteer surveyors during the entire nesting period. Records form new and historic colonies collected throughout the season will allow researchers to more precisely determine the true. 1997 nesting population size.

Colony Counts

It is important to accurately estimate the number of birds you observe at a nesting colony. For active colonies, please provide your best estimate of the total number of adults present at the site. Repeat visits later in the breeding season are encouraged to determine the fate of active colonies, but under no circumstances should you enter an active colony or otherwise disturb the birds while attempting to census them more accurately. As a general rule, you should hide behind vegetation or other natural blinds while making your count and stay 15-25 meters away from any nesting area.

Because of the frenetic activity associated with most breeding colonies, it is almost impossible to make an exact count of all adults present for even short time intervals. Therefore, make your best estimate based on a 10 to 15 minute period to minimize

disturbance to the colony. Please round your numbers according to the size of the colony. For example, small colonies (i.e., about 100 adults) should be rounded to l0s, and medium-sized colonies (i.e., about 1,000 adults) should be rounded to l00s, and large colonies (i.e. 10,000 or more adults) should be rounded to 1,000s. Please avoid using the greater than or less than symbols (< >) or a range when recording estimates on field survey forms. The data you submit will be entered into an existing database and we have no way of determining the degree to which greater than or less than or a range of values should be applied. Your estimate is the best indicator we have so please provide a numeric value as we recognize, and will account for, the variation in colony estimates.

As a reminder, please secure access to private property from the landowner before you enter his or her property. If there is any question about access, use caution and stay on public property. Remember, tricolored blackbirds are not a listed species and colony protection is entirely voluntary and is most successful when a positive, informative approach is used. The Department or the primary researchers will make landowner contacts but we would appreciate any information which may assist us in this effort.

Field Survey Forms

Please include all requested information on the enclosed field survey forms. Please complete a separate form for each colony observed. Because survey forms may be separated prior to entry in the database, please avoid statements such as “see previous form” or “same as previous location” statements. The following are specific instructions for completing field survey forms.

Top Section - Please complete all information. It is essential that survey forms include the county in which observations were made. Include your name, address, phone and a fax number or e-mail address so that we can contact you if we require additional information.

We ask that survey forms be returned immediately to the address indicated in Section 2. You may fax or mail completed forms. Survey information from the 1997 effort, combined with past survey information, will be included in a comprehensive Status Review and Management Guidelines document which must be completed in May. If you discover a previously undocumented site or visit a site which may require verification or additional site visits, researchers will be available to visit this site within a few days of the survey date. Fax completed forms for these sites directly to Dr. William Hamilton at (916) 752-3350. You may leave a message for Dr. Hamilton at any time at (916) 752-1122. Dr. Hamilton and Dr. Edward Beedy are the primary researchers on this project and transmittal of information on new or uncertain colonies directly to them would be greatly appreciated. Please note that completed survey forms for these sites should also be forwarded to Kevin Hunting.

Nesting Status - Please indicate either nesting or non-nesting status in the following section. Each colony will either have a nesting or non-nesting status

and it is important that volunteer surveyors determine the colony status. If you are unsure of the status of the colony, fill out the non-nesting section and indicate observations in comments on the reverse of the form. If nesting and non-nesting colonies are observed in close proximity to each other, please complete separate field survey forms for each colony observed. As previously discussed, enter only a single whole number for a colony size estimate. If you have difficulty estimating colony size, please contact Dr. Hamilton at (916) 752-3350 for assistance. We recognize the variability in estimating colony size and will account for this when the data are analyzed. Please estimate the area (in acres) occupied by both the colony and of available habitat. Again, please use a single whole number for estimates. Distance to nearest water and the type of water (e.g., fresh water marsh, open water) is also important to note.

- Location - We have recently created a database which includes all past survey information and are in the process of assigning United Transverse Mercator (UTM) coordinates to each observation so the information can be used and analyzed in a Geographic Information System (GIS). This tool will allow us to quickly identify high priority conservation areas or areas where limited management funds may be applied. Therefore, providing meaningful, accurate geographic locations on survey forms is very important. We prefer UTM or Latilong coordinates if they can be readily determined. If not, please include a map indicating the location of the observation. Preferred formats (in order of preference) are; USGS quad map, Metsker© maps, county or city street maps. If you are using a copy of a portion of a map, please write the name (quad name) and county on the map so that it may be referenced prior to data entry.

  History - Information on historic nest colony sites is very important in assessing trends, management and conservation needs and breeding behavior. Please indicate if the observed colony is nesting in a known historic site, when, if known, the site was active. Notes on habitat condition, current or potential threats or ownership (ie., private or public) are very valuable for future efforts.

Contact either Kevin Hunting or Dr. Bill Hamilton if you have any questions regarding the survey effort, completing survey forms or if you require additional forms or other information. Thank you for your assistance in this effort. This effort would not be possible without your help and we hope the 1997 survey effort can be used as a model for volunteer status assessments for other species.

Appendix C. 1997 Tricolored Blackbird Survey Form

1997 TRICOLORED BLACKBIRD SURVEY FORM

County of Observation:_____ Date of Observation:_____
Observer:-_____ Telephone #:_____
Address: _____

Target Date: Saturday, April 26, 1997 (alternate dates - April 25, April 27)
Reports for any *breeding season* date are important. Specify date(s) of your observations.

Complete one form for *each* individual nesting or non-nesting colony and each exact location where tricolors have been observed nesting in the past but were not present on April 26. **Please return this form immediately to allow researchers time to follow up on your observations.**

Send the completed form to: Kevin Hunting
California Department of Fish and Game
1416 9th Street
Sacramento, CA 95814

Phone: (916) 657-4436
Fax: (916) 653-1019

NESTING COLONIES (if no nesting behavior is observed, please go to Non-Nesting below):

Estimated number and sex ratio of adults:_____ (Whole number, not a range or +/- please)

- Singing..... Yes No Please circle choice that applies.
- Carrying nesting material..... Yes No
- Adults carrying food ..... Yes No
- Fledglings out of nest..... Yes No
- Estimated area (acres) of habitat occupied by nests:_____ AC.
- Estimated area (acres) of habitat not occupied by nests:_____ AC.
- Nesting Substrate: Do not use tules as a category. Instead, use cattails, bulrushes, or other specific plant species designations. (If more than one species, use percentages.)
  ___ Cattails ___ Himalaya Blackberries ___ Willows
  ___ Bulrushes ___ Other Blackberries ___ Nettles
  ___ Ag Fields (circle one type): barley wheat silage thistles mustard
  ___ Other (specify species): _____

NON-NESTING COLONIES OR FLOCKS:

Estimated number and sex ratio of adults:_____(Whole number, not a range or +/- please)

LOCATION (Nesting or Non-Nesting):

Please give the exact location and include a copy of a map (topo maps are best) if possible. USGS quad name and UTM coordinates are preferred.

- USGS Quad Name:_____
- UTM Coordinates (GPS):_____ N _____ E _____ Zone
- Township, Range, Section: Twn_____ Rng _____ Sec_____

Directions: How to reach the observation site. Road names, distances travelled, local landmarks

- Road Designations:_____
- Owner or local contact, if known:_____

HISTORY: Have you or has anyone in your party observed tricolors nesting at this exact or nearby (specify which) location in the past? If yes, give years:_____
Condition of historic site:_____

OFFICE USE ONLY: LOC_ID _____ Entry Date_____ By___ A:SURVFORM. WPD 11Mar97

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Dynamics of extinction: population decline in the colonially nesting Tricolored Blackbird Agelaius tricolor

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Dynamics of extinction: population decline in the colonially nesting Tricolored Blackbird *Agelaius tricolor*

LIZETTE F. COOK and CATHERINE A. TOFT

Summary

Tricolored Blackbird *Agelaius tricolor* is a rapidly declining species largely endemic to California and forms larger breeding colonies than any other extant North American landbird following the extinction of Passenger Pigeon *Ectopistes migratorius*. We present information on its distribution, breeding habitat and changes in global population size using data collected since the 1930s. We also present data on reproductive success at 103 colonies between 1992 and 2003. While possibly once the most abundant bird throughout much of its range, it declined by over 50% between the 1930s and early 1990s, and by a further *c.* 56% between 1994 and 2000. The global population is now smaller than the historic size of some individual breeding colonies. Reproductive success was significantly higher in upland non-native vegetation (primarily Himalayan blackberry *Rubus discolor*) than in native emergent cattail *Typha* spp. and bulrush *Scirpus* spp. marshes, its likely predominant historic breeding habitat. Contemporary losses of important upland nesting substrate, combined with low reproductive success in native habitats and complete breeding failure in harvested agricultural fields, are the most likely causes of recent declines. Recovery of this species presents possible conflicts in conservation policy because successful reproduction now largely depends on invasive non-native plants and the willingness of farmers to delay harvest or to lose portions of their crops.

Introduction

Colonially nesting birds are especially vulnerable to extinction. Three of the half-dozen or so modern extinctions among bird species in North America north of Mexico were colonial or highly social breeders: Passenger Pigeon *Ectopistes migratorius*; Carolina Parakeet *Conuropsis carolinensis* and Great Auk *Pinguinus impennis*. Because a small number of colonies may include a relatively large proportion of the population, human activities can have catastrophic effects on colonial birds either directly by the taking of adults or offspring or indirectly through habitat loss. Where breeding is socially facilitated, reduced populations may ultimately be driven to extinction through Allee effects (inverse density dependence defined as a positive relationship between population density and survival and reproduction; Allee 1931, Courchamp and Clutton-Brock 1999, Stephens and Sutherland 1999). Passenger Pigeon, once the most abundant bird in North America, may have ultimately succumbed to extinction following widespread hunting and habitat loss because it could not survive at low population densities (Blockstein 2002, Bucher 1992, Stephens and Sutherland 1999, Wilcove 1999).

Tricolored Blackbird *Agelaius tricolor* form the largest breeding colonies of any North America landbird, a distinction held by Passenger Pigeon prior to its extinction in 1914. The majority of the population can still breed in colonies of tens of thousands, but the number of such colonies is now small. Colonial breeding in this species, which includes highly synchronous nesting behaviour (Orians 1961, Collier 1968), is an adaptation that is likely to confer protection from predators through predator saturation and mutual defence (Wiklund and Andersson 1994, Picman *et al.* 2002). Tricolored Blackbirds also forage communally throughout the breeding season and are likewise social during all other times of the year. These characteristics suggest that both reproduction and survival could be inversely density-dependent.

Largely endemic to California (Neff 1937, Orians 1961, DeHaven *et al.* 1975*a*), and once among the most abundant bird species throughout most of its range (Baird *et al.* 1874, Grinnell 1898, Neff 1937), the global population of Tricolored Blackbird declined by over 50% during the 40 years following its first co-ordinated surveys in the early 1930s (Neff 1937, DeHaven *et al.* 1975*a*). In the mid-1800s, one observer described how wintering flocks could "darken the sky for some distance by their masses" (Heermann 1859), a reference reminiscent of Passenger Pigeon (Wilcove 1999). Censuses in the early 1930s revealed colonies with as many as 300,000 breeding adults and a total estimated population of over 700,000 in mostly the northern portion of the species' range (Neff 1937). These data, combined with other information on local populations in the southern portions of its range, (Collier 1968, DeHaven *et al.* 1975*a*), suggest numbers historically may well have exceeded 1 million. Multiple colonies of more than 100,000 adults were reported as recently as the 1960s (Orians 1961, Payne 1969), but a decade later the estimated population was reduced by over half of that found in the 1930s (DeHaven *et al.* 1975*a*). Tricolored Blackbird is currently classified in California as a Species of Special Concern and federally as a Migratory Bird of Management Concern, categories which identify reduced populations but do not include the legal protections afforded species listed as threatened.

Much of the breeding habitat of Tricolored Blackbird today consists of vegetation that differs from that of its original habitats. Of those colonies observed during the 1930s, *c.* 97% of breeding occurred in the vast deepwater emergent marshes of cattail *Typha* spp. and bulrush *Scirpus* spp. throughout California's Central Valley (Neff 1937). The preponderance of upland nesting that is found today was not reported during this time and the vast majority of upland substrates used now consist of non-native plant species that would not have been present in the Californian landscape prior to the arrival of Europeans. Nesting over water apparently affords protection from predators in many marsh-nesting birds and is a primary criterion for nest-site selection in congeners of the Tricolored Blackbird (Red-winged Blackbird *A. phoeniceus* and Yellow-winged Blackbird *A. thilius*, Yellow-headed Blackbird *Xanthocephalus xanthocephalus*), and other passerines (Picman *et al.* 1993, 2002, Picman and Isabelle 1995, Hansson *et al.* 2000, Massoni and Reboreda 2001). Although the historic range of Tricolored Blackbird has changed little since the 1930s, approximately half of all nesting is now in upland habitats. This apparent shift from wetland to upland is surely due to the loss of 96% of California wetlands over the last 150 years from 1,500,000 ha before European settlement (Kreissman 1991).

Here we document and evaluate the population decline of Tricolored Blackbird and explore possible causes using data on this species that were collected intermittently

Table 1. Proportions of colonies and individuals of Tricolored Blackbirds by nesting substrate in the 1930s, 1970s, 1994 and 2000.

Nesting substrate	1932–1934		1968–1972		1994		2000	
	% colonies	% birds	% colonies	% birds	% colonies	% birds	% colonies	% birds
Emergent marsh	94.8	92.7	69.7	[a]	47.4	25.7	59.6	54.0
Himalayan blackberry	1.3	0.1	16.1	[a]	31.4	20.8	20.2	11.5
Silage	0.0	0.0	0.0	[a]	5.1	40.2	5.8	16.7
Other flooded plants	1.3	0.2	5.8	[a]	3.8	2.9	3.8	4.1
Other upland plants	2.6	7.0	9.0	[a]	12.2	10.4	10.6	13.6
Total flooded plants	96.1	93.0	73.0	[a]	51.3	28.6	63.5	58.1
Total upland plants	3.9	7.0	27.1	[a]	48.7	71.4	36.5	41.9
Total native plants	96.7	93.0	75.5	[a]	60.9	33.3	65.4	54.5
Total non-native plants	3.3	7.0	24.5	[a]	39.1	66.7	34.6	45.5

Data from 1932–1934 are from Neff (1937), Sacramento Valley and northern San Joaquin Valley. Data from 1968–1972 are from DeHaven *et al.* (1975a), statewide. Data from 1994 and 2000 are from Hamilton *et al.* (1995), Hamilton (2000) and Cook (unpubl. data). When nesting substrate vegetation was mixed, the predominant vegetation was used to categorize the nesting substrate. Percentage of colonies and birds are for all colonies located throughout the breeding season and may represent colonies and birds counted more than once (see text).
[a]Data not available.

over the past 70 years. We hypothesized that if nest-site selection was predator-driven, then reproductive success should be higher in emergent marshes than in upland substrate as has been shown for other marsh-nesting birds. If true, then scarcity of available nest-sites in emergent marshes, and increased use of upland substrates, could explain the continuing decline of the Tricolored Blackbird population. Because wetland environments are among the most highly threatened worldwide, our results could have implications for management of other marsh-nesting birds. We also searched for evidence that Tricolored Blackbird could be subject to inverse density dependence, and, therefore, under threat of imminent extinction, by exploring the similarity of its circumstances to those surrounding the extinction of another colonially nesting bird, Passenger Pigeon.

Study area and methods

Study area

Over 90% of the Tricolored Blackbird population has historically nested in California's Central Valley, a basin 64 km wide and 644 km long running north–south, and this continues to be the case (Neff 1937, Orians 1961, DeHaven *et al.* 1975*a*, Heitmeyer *et al.* 1988, Beedy and Hamilton 1999). Most individuals and colonies are found in the southern portion, specifically the San Joaquin Valley, during

the first half of the breeding season (DeHaven *et al.* 1975*b*, Hamilton 1998). Later, most birds disperse and begin appearing in its northern portion, the Sacramento Valley, for additional nesting attempts (Hamilton 1998).

Large numbers of birds also bred historically in southern California (Baird *et al.* 1874, Grinnell 1898, Collier 1968). Today this region contains a much reduced population and one greatly smaller than that of the Central Valley. Birds have been observed nesting in other portions of California, at elevations as high as 1,200 m (DeHaven *et al.* 1975*a*), and locally in Baja California (Wilbur 1987, Howell and Webb 1995), Oregon (Neff 1933, 1937), and possibly Nevada and Washington (Beedy and Hamilton 1999). However, there is no evidence that colonies outside the Central Valley and southern California ever represented more than 5% of the total population and we know of no accounts after 1998 of Tricolored Blackbird breeding outside of California.

Data collection

Continuing field studies of this species have been conducted since 1991 throughout California. Data used in this study are derived from of a series of reports on Tricolored Blackbird status, breeding habitat and reproductive success prepared semi-annually for the United States Fish and Wildlife Service and California Department of Fish and Game between 1992 and 2000 (Bowen *et al.* 1992, Hamilton 1993, 1997, 2000, Hamilton *et al.* 1994, Hamilton *et al.* 1999), and from L. Cook (unpubl. data).

Colonies were surveyed throughout the breeding season (March to July) and defined as any nesting group separated by more than 500 m from another such group, or by new settlements of groups of birds within the proximity of previously established colonies. Data on reproductive success were collected between 1992 and 2003 from 103 colonies ranging in size from 30 to 105,000 breeding adults. Roughly half were in emergent marshes (46%) and half in upland habitats (54%). Transects were established during the incubation period using a minimum target sample of 25 nests that already contained eggs. Colonies can be entered quickly and carefully during the incubation period without causing nest abandonment or creating trails for predators to follow, but offspring older than 8 days of age will abandon their nests if approached. On the first visit, nests were marked with plastic flagging and their contents recorded. Sample colonies were then monitored for signs of hatching by watching for parents returning to the colony with food. Because breeding is highly synchronous, hatching of marked nests often began the same day and rarely within more than a couple of days of each other.

To avoid disturbing nestlings older than 8 days, nests were re-checked in colonies shortly after hatching began to age offspring. A final record of nest contents was made 8 days after the first eggs hatched. We estimated mean reproductive success for each colony as the number of surviving nestlings per nest at that time (Beletsky 1996).

Population censuses were also conducted between 1994 and 2000 to estimate the population size and to monitor population size trends over time. More than 100 volunteer bird-watchers and personnel from the California Audubon Society, United States Fish and Wildlife Service and the California Department of Fish and Game participated. One or more observers were coordinated to census counties within the species' range to maximize the total area censused. Observers reported colony locations, estimated

colony sizes, and described nesting and foraging habitat. Censuses were limited to single weekends late in April because failed colonies may relocate to new breeding sites within a few days (Orians 1961) and because most of the population in the San Joaquin Valley relocates to the Sacramento Valley in the second half of the season (Hamilton 1998). The brief duration of the censuses was to ensure that participants counted individual birds only once.

Census effort was greatest in 1994 ($n = 37$), 1997 ($n = 34$) and 2000 ($n = 33$), calculated as the number of participants and counties surveyed. For this reason we included only data from these years in our analyses relevant to habitat use and population changes over time. Census effort and efficacy increased during the study period both because the number of participants increased from 68 in 1994 to 81 in 2000 and because participants were better informed about colony locations in each succeeding year.

Data analysis

We classified vegetative substrates used by nesting birds to evaluate patterns of habitat use in three ways (Table 1). First, we placed vegetation types into five groups: the three most commonly used substrates (emergent marsh vegetation, Himalayan blackberry and grain silage); and two less frequently used vegetation types (other flooded vegetation including native and non-native species and other upland vegetation that was not Himalayan blackberry or grain silage). We also used two classifications characterizing these vegetation types more broadly: flooded versus upland habitats, and native versus non-native plant communities.

We grouped breeding localities into geographic regions based on the physiogeographic distinctions between northern and southern portions of the Central Valley (Sacramento vs San Joaquin Valleys based on drainages of the two major rivers in the Central Valley) and southern California identified in the California Digital Conservation Atlas (www.legacy.ca.gov/new_atlas), and on temporal variation in use of the different regions by the majority of breeding birds (Hamilton 1998). We include a fourth region, southern Sacramento County, located in the northernmost section of the San Joaquin Valley, because relative habitat use there was distinct from other regions in the species' range.

We used a combination of MANOVA and non-parametric ANOVA (Kruskal–Wallis, Mann–Whitney) to evaluate changes in colony sizes and frequencies over time and to determine differences in reproductive success among colonies. We used parametric MANOVA where assumptions of normality and independence were met. We used non-parametric ANOVA where data were not normally distributed even after log transformation or when proportions were evaluated.

Results

Population trends

The total Tricolored Blackbird population was estimated to be 369,000 in 1994, 233,000 in 1997 and 162,000 in 2000, a decline of 56% over this period, and fewer colonies were located in 2000 ($n = 104$) than in 1994 ($n = 156$) (Figure 1). Because participation in the censuses was greatest in 2000 and the census effort was

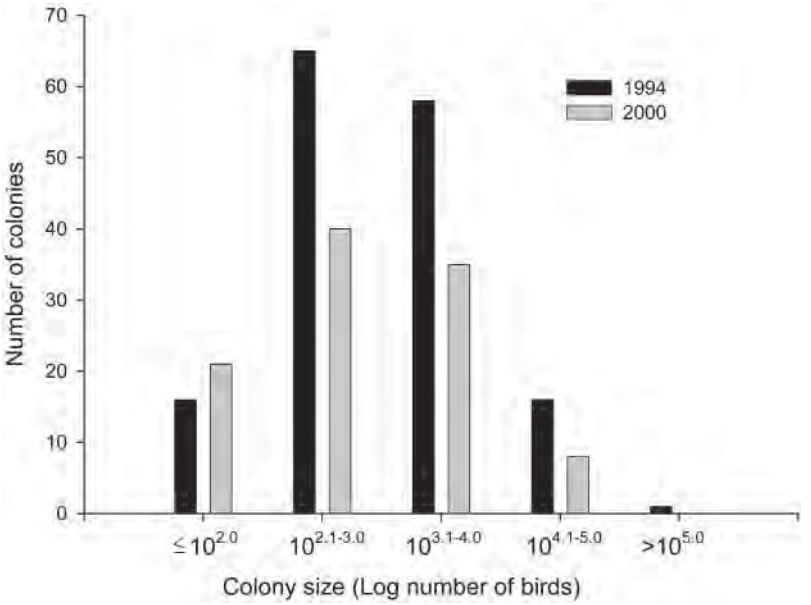

Figure 1. Size distributions of Tricolored Blackbird colonies (log number of birds) in 1994 and 2000.

increasingly informed each year about the birds' locations (Methods), this estimate of population decline may be conservative. With the declining global population size, colonies were smaller, on average, in 2000 than in 1994 (Figure 1; MANOVA full model, log colony size vs year, region, and nesting substrate: $F_{10,345} = 12.79$, $P < 0.001$; year effect: $F_{2,345} = 4.42$, $P = 0.013$).

The greatest changes to a regional population were in southern Sacramento County, where the number of located breeding birds declined by 95% between 1994 and 2002 (Figure 2). During this time, the proportion of birds using the Sacramento Valley increased in 2000 over that in 1994 (36% and 23% respectively). The proportion of the population nesting in the remainder of the San Joaquin Valley in 1994 and 2000 was relatively unchanged (53% and 51% respectively). Mean colony size varied among regions (Figure 3A). On average, colonies in the Central Valley (Sacramento and San Joaquin Valleys inclusive) were an order of magnitude larger than those elsewhere (MANOVA above; region effect: $F_{4,345} = 14.44$, $P < 0.001$).

Nesting substrates

Nesting was predominantly in flooded vegetation or in vegetation that was armoured in some way by spines, thorns, urticating structures, or other means of protection, whether these plants were flooded or not (Table 1). The most commonly used nesting substrates were cattail and bulrush in deep-water emergent marshes and Himalayan blackberry and grain silage crops in uplands. Himalayan blackberry substrates used were almost entirely those that occurred in open spaces surrounded by grasslands including rangeland. Tricolored Blackbirds also colonized pure stands of weeds including prickly lettuce *Lactuca serriola* and thistles *Circium* spp. in fallow agricultural

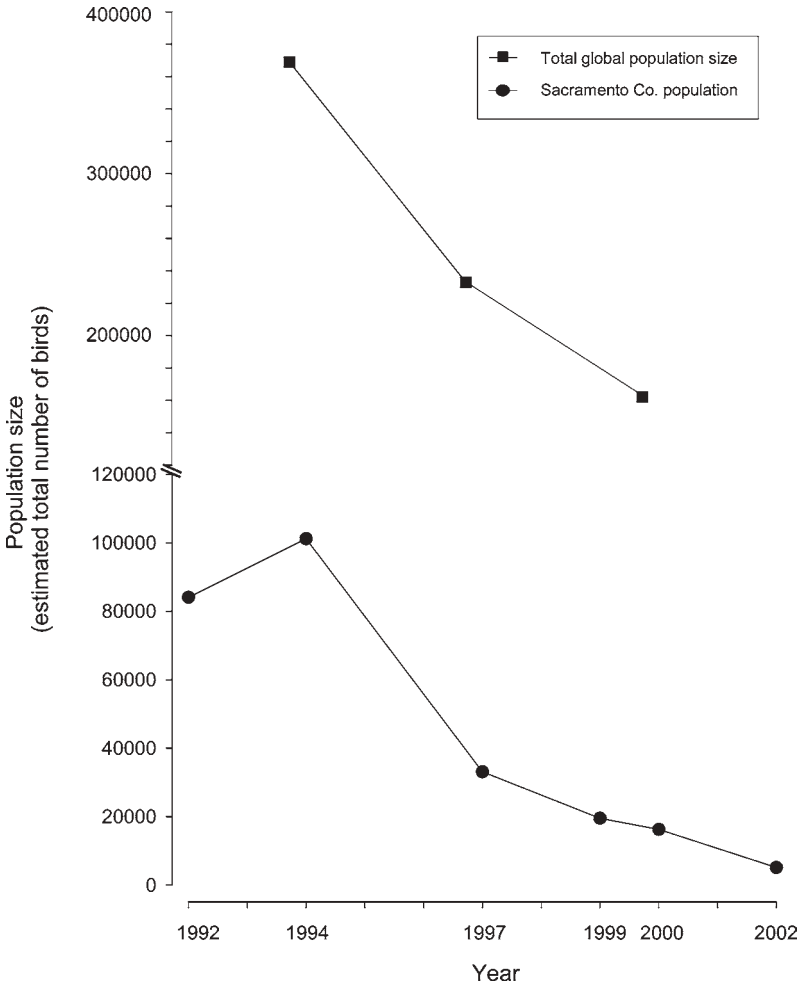

Figure 2. Population decline of the global Tricolored Blackbird population and of the population in Sacramento County between 1992 and 2002. The upper curve is vertically compressed relative to the lower curve because of the magnitude of population size differences.

fields. Overall, 91% of breeding individuals and 96% of colonies located in flooded habitats nested in native vegetation and 93% of breeding adults and 76% of colonies located in upland substrates nested in non-native vegetation.

The proportion of birds nesting in flooded habitats, and in particular native emergent marshes, decreased precipitously between the 1930s and 1990s. Concomitantly, nesting increased in upland substrates dominated by non-native plants. Some reversal of this trend occurred between 1994 and 2000, with increased proportions of birds using native emergent marshes and grain silage. Use of Himalayan blackberry, in particular, declined between 1994 and 2000, resulting in an overall decrease in the proportions of adults nesting in non-native substrates and an increase in the proportion of the population nesting in emergent marshes in the smaller 2000 population.

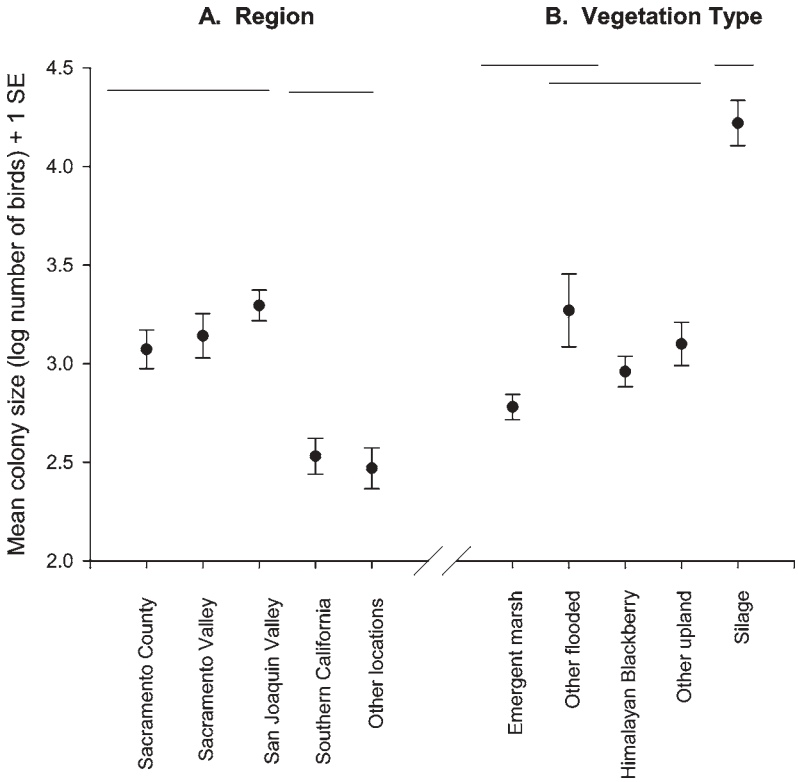

Figure 3. Mean colony size (log number of birds) by (A) region and (B) vegetation type. Lines connect means that are not significantly different (Tukey multiple means comparison).

Habitat use varied among regions (Table 2). In the Sacramento Valley, most nests were in native emergent marshes. In the San Joaquin Valley most nests were in upland non-native vegetation. Proportionately more colonies in southern Sacramento County settled in Himalayan blackberry than in other regions. In the lower San Joaquin Valley, a substantial proportion of birds nested in grain silage crops that were located near dairies. At these sites, adults forage largely on the abundant feedlot grain provided to cattle before switching to insects in nearby fields (often alfalfa) to feed their young. Birds using silage represented 5% of all located colonies among regions and 30% of all nests, but up to 50% of the total population of birds in recent years. Colonies nesting in grain silage were significantly larger than those in either flooded or other upland vegetation, primarily Himalayan blackberry (Figure 3B). Some of the largest colonies located were in native emergent marshes; however, colonies nesting in this substrate were smaller on average than those nesting in other flooded vegetation and all types of upland vegetation (MANOVA above; nesting substrate effect: $F_{4,345} = 11.35$, $P < 0.001$).

Reproductive success

Mean number of fledglings per nest varied among nesting substrates (Table 3). Nests in non-native vegetation fledged significantly more offspring than those in native

Table 2. Numbers of Tricolored Blackbird colonies and proportions of colonies and individuals nesting by substrate during the years 1994, 1997 and 2000 combined among identified regions in California.

	Emergent marsh			Himalayan blackberry			Silage			Other flooded vegetation			Other protective vegetation		
	No. of colonies	% colonies	% birds	No. of colonies	% colonies	% birds	No. of colonies	% colonies	% birds	No. of colonies	% colonies	% birds	No. of colonies	% colonies	% birds
San Joaquin Valley	52	15.0	12.6	14	4.0	2.3	17	4.9	29.6	7	2.0	3.4	16	4.6	5.2
Sacramento Valley	40	11.6	20.8	18	5.2	2.7	0			5	1.4	1.2	1	0.3	2.1
Sacramento County	7	2.2	1.6	48	13.9	9.5	0			0			0		
Southern California	59	17.0	5.4	2	0.6	0.1	0			2	0.6	0.1	8	2.3	1.1
Other	30	8.7	1.2	5	1.4	0.4	0			3	0.9	0.3	12	3.5	0.6

Table 3. Mean reproductive success (number of chicks per nest at 8 days after first egg hatched) of colonies by substrate and study region from 1992 to 2003

	No. of chicks per nest		
	n	Mean	SE
Nesting substrate			
Emergent marsh	40	0.5	0.09
Himalayan blackberry	23	2.0	0.16
Silage	26	0.2	0.08
Silage[a]	4	1.0	0.26
Other flooded plants	6	1.2	0.51
Other upland plants[a]	7	1.2	0.37
Total native plants	46	0.6	0.11
Total non-native plants[a]	34	1.7	0.15
Region			
San Joaquin Valley	45	0.6	0.12
San Joaquin Valley[a]	22	1.1	0.17
Sacramento Valley	32	0.3	0.09
Sacramento County	24	1.8	0.19
Southern California	3	0.9	0.76
All colonies	103	0.8	0.09

[a]Excluding colonies that failed entirely when crops were harvested.

habitats ($U_{78} = 258.50$, $P < 0.001$). Of colonies where one or more offspring fledged per nest on average, 70% ($n = 26/37$) nested in non-native substrates. Of colonies where mean number of fledglings per nest was 0.5 or lower (excluding colonies lost to harvest operations) 94% ($n = 30/32$) were in native vegetation. Approximately 40% ($n = 16/40$) of all native emergent marsh-nesting colonies failed completely, compared with 6% ($n = 2/34$) of colonies in non-native vegetation not destroyed by harvesting. Colonies in grain silage failed entirely unless intervention protected them from harvest operations.

When we removed colonies destroyed by harvest from the analysis, mean number of fledglings per nest was significantly higher in grain silage than in emergent marshes ($U_{42} = 33.50$, $P = 0.05$) but still significantly lower than in Himalayan blackberry ($U_{25} = 80.50$, $P = 0.018$). Within colonies where reproduction did not fail entirely, the proportion of nests failing to produce any young was significantly higher in native emergent marshes (80.0%) than in the non-native substrates (Himalayan blackberry, 19.7%, and silage 40.3% respectively; $H_{2,51} = 26.336$, $P < 0.001$). Thus, by various measures reproductive success was significantly lower in native emergent marshes than in upland non-native vegetation of various kinds.

Number of fledglings per nest was significantly higher in southern Sacramento County than in other regions ($U_{101} = 252.000$, $P < 0.001$). This result reflected the greater use of Himalayan blackberry in that region compared with other regions, combined with the higher reproductive success in Himalayan blackberry on average. When colonies lost to crop-harvesting were excluded from the analysis, more offspring were fledged per nest in the San Joaquin than in the Sacramento Valley ($U_{52} = 568.00$, $P < 0.001$). This result reflected the proportionately lower use of emergent marshes in the San Joaquin Valley than the Sacramento Valley and the greater reproductive success in upland substrates compared with emergent marshes.

Colonies that experienced total failure in reproduction were slightly smaller on average than those in which some young were fledged, excluding the silage colonies destroyed during harvest (mean log number of birds 3.22 and 3.61 respectively; $F_{1,80} = 4.26$, $P = 0.043$). However, mean number of young fledged per nest did not differ significantly between small and large colonies (cut point log size = 3.5 or about 3,000 birds; $F_{1,80} = 0.44$, $P = 0.51$).

Discussion

Causes of population decline

Native wetland habitat losses in the later nineteenth and early twentieth centuries, and several other causes, may have originally reduced the Tricolored Blackbird population from that prior to European arrival and the first coordinated effort to estimate the species' abundance (Neff 1937). Market hunting was a major source of mortality between the later nineteenth and early twentieth century (Neff 1937). This period was shortly followed by large-scale poisoning efforts to control crop depredation during the 1930s (Neff 1942). Since *c.*1930, when Tricolored Blackbird was identified as an agricultural pest, subsequent population data (Orians 1961, DeHaven *et al.* 1975a, Hamilton 2000) have shown a continuing decline throughout its range. The estimated global population by the year 2000 was at an all-time low of no more than 200,000 birds, or *c.* 20% of its estimated historic size and smaller than some of the single, large colonies reported earlier (Neff 1937).

The causes for decline, as revealed by this and previous studies, are straightforward and suggest urgent concern for the continuing trajectory of this species' population size. Although Tricolored Blackbird is still found throughout its historic range, loss of suitable nesting habitat statewide because of changes in land-use throughout the past century (Kreissman 1991) continues to cause widespread failure of breeding.

The first adverse change in land-use was the drainage and conversion of 96% or more of California's wetlands, Tricolored Blackbird's likely primary native nesting habitat in the past 150 years (Kreissman 1991). The loss of native wetlands alone, however, has not contributed to the recent precipitous decline. Tricolored Blackbirds have been adaptable in their choice of nesting substrates. In particular, they can reproduce successfully in upland environments, primarily in the introduced Himalayan blackberry, but also in other patches of largely non-native armoured plants, which deter predation on nests, and grain crops at large dairy operations where feedlots provide abundant feed and the crops themselves provide some deterrence of predators. The availability of some of these upland nest-sites, particularly Himalayan blackberry patches where these occurred in open rangelands, between the 1970s and mid-1990s may have helped delay the kind of precipitous decline observed between 1994 and 2000.

With a rapidly growing human population in California's Central Valley in the past 20 years has come more intense land-use, with removal of Himalayan blackberry patches, conversion or degradation of former rangeland, and highly managed harvest of grain silage for dairies that run on a narrow economic margin. A portion of the decline in the Tricolored Blackbird population during the 1990s was probably a result of its near extirpation from southern Sacramento County, where extensive Himalayan

blackberry patches and rangeland once supported a large and highly successful breeding population (Cook 1996). This region served, as early as 1994, as the single largest source location for fledgling production. In recent years, pressure from the human population, including conversion of rangelands to vineyards, has been particularly intense there, resulting in the loss of the largest colony-sites and approximately two-thirds of all known breeding locations in the region. Ultimate causes have included one or both of direct destruction of Himalayan blackberry patches themselves and permanent changes in land-use that reduce or degrade the suitability of the available surrounding foraging habitat. Substantially reduced breeding in southern Sacramento County most likely explains the more recent increasing trend toward nesting again in emergent marshes, especially in the nearby Sacramento Valley, where reproductive success is lowest on average.

Evidence from studies of marsh-nesting passerines implicates predation as the most common cause of partial and entire nest failure in native wetlands (Picman *et al.* 1993, 2002, Picman and Isabelle 1995, Massoni and Reboreda 2001). Nesting over water provides some protection from predators (Picman *et al.* 1993). However, the reduction of native wetlands to less than 4% of their original extent has probably concentrated predator populations in the remaining wetlands more than was true historically. In this study, a larger proportion of colonies in native wetlands than in upland substrates suffered complete reproductive failure attributable primarily to predation. In particular, some of the largest breeding colonies in wetlands, such as those in the Sacramento Valley, failed completely despite a weak trend in this study for larger breeding colonies to be less likely to fail completely, and the fact that colonial nesting is considered an adaptation against predation through the efficacy of mutual defence (Picman *et al.* 2002). In earlier studies, colony settlement was reported to be sporadic and unpredictable (Neff 1937, Orians 1961) and banded nestlings were only somewhat philopatric (DeHaven *et al.* 1975*b*). More recent data, however, indicate repeated settlement of many sites despite poor breeding outcomes (this study). In addition, the recent losses of known breeding sites are concomitant with the decline in local breeding populations despite an abundance of what appear to be other suitable sites which do not become used. This trend toward apparent increased philopatry probably reflects the now vastly limited availability of suitable nesting habitat.

In contrast to breeding in native wetlands, breeding in upland vegetation was far more successful by every measure: complete failure of breeding colonies was less likely and number of fledglings per nest was higher in upland vegetation (primarily Himalayan blackberry but also dense patches of non-native bull, milk and Canada thistles *Circium* spp., native nettles *Urtica* spp. and other spiny weed patches) than in native wetlands, a pattern reported in other studies of marsh-nesting passerines (Jobin and Picman 2002). Well-developed Himalayan blackberry patches also support highest nest densities: two or three nests per square metre are not uncommon, whereas these densities are relatively rare in native emergent marshes and other substrates. Native blackberries *Rubus* spp. do not provide adequate alternative nest-sites and are rarely used even when they co-occur with Himalayan blackberry. This is probably because patches of native blackberry species do not develop the density, armouring and height characteristics of Himalayan blackberry.

Although reproduction in non-native, upland vegetation that is not agricultural (primarily Himalayan blackberry) was more successful than that in grain silage, colonies in grain silage were an order of magnitude larger than those in any other upland nesting substrate. In the few instances in which the nests were not destroyed by

harvest, the number of fledglings per nest was higher in grain silage than in native emergent marshes. Thus the contribution to population recruitment of colonies nesting in grain silage could be considerable and could potentially play a large role in stabilizing the population.

Patterns of reproductive success in the different nesting substrates suggest that a significant proportion of the breeding population now occurs in population sinks (Pulliam 1988). In this study, catastrophic losses of an entire colony's breeding attempt were frequent and occurred in all years in all commonly used substrates except Himalayan blackberry. Importantly, both native emergent marshes and plants associated with agricultural harvest operations appear to be critical population sinks for Tricolored Blackbird because they are so attractive to the birds for nesting and because complete, colony-wide failure of breeding is so frequent in these nesting substrates. As recently as 2003, approximately 80,000 (half of the last known breeding population) nested in two grain silage fields where 80% of the nesting effort was lost to harvest operations (L. Cook unpubl. data). The recent losses of favourable nesting habitat, combined with the steady state of colony failure in emergent marshes and destruction in grain silage fields, leaves little prospect that the population has remained stable or increased since the last census in 2000. Although re-nesting in other, more productive habitats could in principle compensate for reproductive failures in these putative habitat sinks, the continuing losses of productive habitats together with the continuing decline of the global population of Tricolored Blackbird argues otherwise.

Allee effect and reversing population decline

Like Passenger Pigeons, Tricolored Blackbirds breed colonially and are now adapted to the patchy distribution of a habitat that was widespread before European immigration to North America. The extinction of Passenger Pigeon has been attributed to a combination of highly social and nomadic breeding, the fragmentation of the mast forests that provided abundant forage, and intense commercial hunting (Blockstein 2002, Bucher 1992, Stephans and Southerland 1999, Wilcove 1999). Together these factors pushed the population past a lower threshold of inverse density dependence (the Allee effect) and on to the alternative stable state of global extinction (Stephans and Southerland 1999). Importantly, Passenger Pigeon was once the most abundant bird species in North America, with flocks reported to darken the skies for hours (Wilcove 1999), similar to descriptions of flocks of Tricolored Blackbird in California's Central Valley in the mid-1800s (Heermann 1859).

Because local populations of Tricolored Blackbird are still found in dense breeding colonies, they can leave a false impression of abundance upon casual observers. The long-term population trends and patterns in reproduction reported in this study reveal that Tricolored Blackbird possesses most of the traits that ultimately led to the extinction of Passenger Pigeon in the same ecological circumstances. These factors include the loss of vast areas of native wetland along with the increasing loss of upland, non-native vegetation favourable for nesting, the trend of decreasing colony size in a highly social breeder, a habit of itinerant breeding (Hamilton 1998), and wholesale mowing down of the largest breeding colonies in agricultural harvest.

We interpret our results to provide clear evidence that extinction is imminent for Tricolored Blackbird if current land-use trends continue, as they certainly will, and if

measures are not implemented immediately to protect breeding colonies in non-native nesting substrates. Overall the current decline of the population is strongly correlated with its persistent use and re-use of attractive habitats where reproduction often fails, combined with continuing losses of productive nesting substrates of all kinds. Introduced plants considered noxious weeds and undesirable in the landscape, now the best nesting habitat for Tricolored Blackbirds, are being lost not only to routine agricultural practices and land conversion but also to removal by the well-meaning conservation community. Although Tricolored Blackbird is considered by the state and federal government as a species of some concern, and is included in various mitigation and conservation management plans, the relationship between its breeding habitat and reproductive success, and other requirements such as suitable and sufficient nearby foraging habitat, have not been adequately addressed. The protection of native emergent marshes is not the solution to reverse the declining population because this habitat provides attractive population sinks. Under current protections, Tricolored Blackbird may therefore be falling through the policy "cracks", because it is not targeted directly as an officially endangered species and protecting its native breeding habitat under current environmental policy is not sufficient to reverse the declining population.

Surely the legacy of Passenger Pigeon should be our understanding of how such extinctions can occur rapidly in extremely abundant organisms because of non-linear population dynamics and thresholds caused by inverse density dependence. Failure to address the impact of habitat and human activities on reproductive success of Tricolored Blackbird may again lead to the extinction of a once-abundant bird. We predict that the Tricolored Blackbird population will decline below an extinction threshold within a decade if measures are not taken immediately to protect Himalayan blackberry, portions of grain silage fields settled by breeding colonies, and other upland habitats that provide for suitable nesting and foraging.

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BREEDING STATUS OF THE TRICOLORED BLACKBIRD, 1969–1972[1]

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During 1969–1972, 164 breeding colonies of tricolored blackbirds were found in California and southern Oregon. The location of the colonies, their sizes (including acreage, number of birds, and number of nests), and nesting habitats are given and comparisons made with previously reported data. The tricolor's general range and major breeding areas have remained unchanged during the past 35 years, but in the Central Valley, population size has declined, perhaps by more than 50%. Possible causes for the decline are given, and other aspects of the tricolor's breeding ecology are discussed.

INTRODUCTION

Since 1967 we have studied blackbird damage to rice in California. Our first step in defining this problem was to investigate the population status of the various species involved in depredations, with particular emphasis on the tricolored blackbird (*Agelaius tricolor*) because of its endemic distribution. Neff's (1937; 1942) studies provide the basis for much current knowledge about the tricolor, but because his data were gathered more than 30 years ago and because more recent workers (Orians 1961*a*, 1961*b*; Orians and Collier 1963; Payne 1965; and Collier 1968) have not provided data on the tricolor's general distribution and numbers, its present status was uncertain. We therefore studied the tricolor during four breeding seasons during 1969–1972. This paper presents our findings on the size and distribution of the tricolor breeding population, and compares them with earlier findings.

METHODS

Each spring (April–June) different portions of the tricolor's range were surveyed by auto for breeding colonies. In 1969 and 1970, the survey was concentrated in the Central Valley (combined Sacramento Valley: Tehama, Butte, Glenn, Colusa, Sutter, Yuba, Yolo, Solano, and Sacramento counties; and San Joaquin Valley: NW Kern, Kings, Tulare, Fresno, Madera, Merced, Stanislaus, and San Joaquin counties). In 1971 we attempted to survey the entire breeding range (excluding Baja California) by driving more than 8,000 miles and visiting most of the reported breeding areas (Table 1) from San Diego through southern Oregon. In 1972 our search was conducted from the northern San Joaquin Valley through southern Oregon. Some of the tabular data also include four colonies we found during brief explorations in

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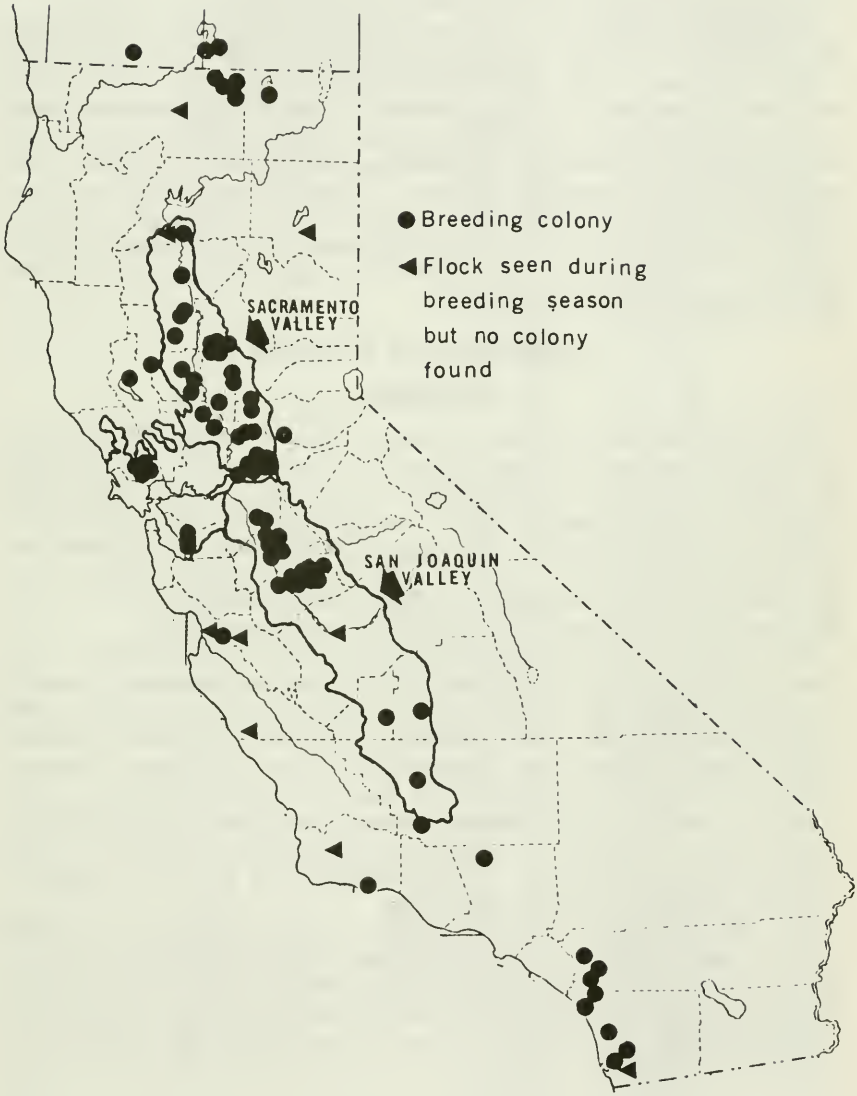

FIGURE 1. Location of tricolored blackbird breeding colonies 1968–1972. (Some of the locations represent more than one colony.)

the Sacramento Valley in 1968. During each of the survey years, records of several additional colonies were provided by amateur and professional ornithologists. However, because we could not thoroughly investigate all colonies and because many of our cooperators' reports were incomplete, all data are not available for each colony.

Estimates of different population segments were made by counts and by projections based on the findings of Payne (1965), Lack and Emlen (1939), and Lack (1968) who indicated that each tricolor female attends only one active nest and that the male: female ratio averages about 1 : 2. If a colony was located early in the nesting cycle when both males and females were present, the breeding population was directly estimated by counts, and the number of active nests to be built was projected. During later nesting stages, such as incubation when the males are absent, or the nestling stage when both sexes may be away from the colony in search of food, the nests were counted and the breeding population was projected.

DISTRIBUTION OF COLONIES

Geographic

Including the four colonies in 1968, we found 168 breeding colonies at 113 locations, each at least 1.6 km (1 mile) apart (Table 1; Figure 1). About 78% (131) of the colonies were in the Central Valley, with 48% (80) in Sacramento Valley, and 30% (51) in the San Joaquin Valley. The remaining 22% (37) were in other parts of California and in southern Oregon. The counties (all in the Central Valley) where the most colonies were found in a single season were Sacramento (11), Merced (10), Stanislaus (7), Glenn (7), and Colusa (4).

Neff (1933; 1937) reported tricolor colonies in 26 counties in California and one county in Oregon; but he believed occasional breeding was likely in at least 15 additional counties. Later, breeding records were published for five more counties in California (Lassen, Alameda, Santa Clara, Ventura, and Riverside) and one in Oregon (Jackson) (Table 1). And in our survey, we found tricolors breeding in four additional counties in California: Sonoma (near Petaluma), El Dorado (near Salmon Falls Road), Modoc (at Clear Lake National Wildlife Refuge), and Siskiyou (at Lower Klamath and Tule Lake National Wildlife Refuges) (Table 1; Figure 1).

We did not find tricolors breeding in four California counties (Marin, Solano, Santa Cruz, and Fresno) where Neff (1937) reported them, but this does not necessarily mean that breeding has declined in these areas. The colonies he found were relatively small (6 to 500 nests), and our searches were limited to one or two quick drives through each county by road.

TABLE 1. Number and Size of Tricolored Blackbird Breeding Colonies Reported Since 1933 and Found During 1968–1972, by Year and County

County	Year(s)	Colonies (range during years)		Source
		Number	Size	
		Sacramento Valley, California		
Sacramento	32–36	1–3	1,000–121,000 nests	Neff 1937
	60	2	30,500 nests	Orians 1961a
	69–72	6–11	15,850– 50,915 birds	Present study
Yolo	31–36	1–3	2,000– 38,000 nests	Neff 1937
	39	1	2,000 birds	Lack and Emlen 1939
	60	1	70,000 nests	Orians 1961a
	69–72	2	5,000– 31,000 birds	Present study
Placer	33, 36	1	1,000– 1,500 nests	Neff 1937
	71	1	?	Present study
Sutter	32–36	1–3	1,000– 13,000 nests	Neff 1937
	68	1	25,000 birds	Present study
Lake	36	1	20 nests	Neff 1937
	72	1	2,500 birds	Present study
Colusa	32–34, 36	2–11	3,000– 37,000 nests	Neff 1937
	59*	1*	19,500 nests	Orians 1960
	59–60	3–4	104,650–156,500 nests	Orians 1961a
	61*	1*	4,000 nests	Payne 1965
	63	?	?	Payne 1965
	69–72	1–4	1,000– 57,000 birds	Present study
El Dorado	71	1	800 birds	Present study
Yuba	31–36	2–9	2,000–113,000 nests	Neff 1937
	39	4	60,000+ birds	Lack and Emlen 1939
	40	2	22,000 nests	Emlen 1941
	59*	1*	2,150 nests	Orians 1960
	59–60	2–3	17,300– 55,000 nests	Orians 1961a
	62–63	?	?	Payne 1965
	60–64*	1–2*	100– 400 nests	Payne 1965
	69–70	1–2	1,000– 5,250 birds	Present study
Butte	32–36	2–13	3,000–106,000 nests	Neff 1937
	60	1	35,000 nests	Orians 1961a
	61, 64*	1*	100– 150 nests	Payne 1965
	69–72	1–3	500– 25,000 birds	Present study
Glenn	32–36	3–7	4,000–282,000 nests	Neff 1937
	63*	1*	20 nests	Payne 1965
	63–64	?	?	Payne 1965
	69–72	1–3	2,000– 18,500 birds	Present study
	72*	1*	1,000 nests	Present study
Tehama	36	1	75 nests	Neff 1937
	69–70, 72	1	1,500– 2,000 birds	Present study
		San Joaquin Valley, California		
San Joaquin	35–36	1–4	100– 3,750 nests	Neff 1937
	69–72	1–2	500– 5,050 birds	Present study
Stanislaus	32, 35–36	2–6	8,000– 12,500 nests	Neff 1937
	69–72	2–7	4,200– 25,300 birds	Present study
Merced	32–36	1–19	2,000– 58,000 nests	Neff 1937
	69–72	3–10	12,500– 26,000 birds	Present study
Fresno	36	1	100 nests	Neff 1937
	56	1	10,000 birds	AFN† 10(4):362, 1956
	62, 64	?	?	Payne 1965
	63*	2*	101 nests	Payne 1965
Kings	32	1	2,000 nests	Neff 1937
	71	1	25,000 birds	Present study
Tulare	35	1	2,000 nests	Neff 1937
	71	1	1,500 birds	Present study
Kern	35–36	1–2	500– 2,000 nests	Neff 1937
	53	1	1,000 nests	AFN 7(4):292, 1953
	56, 58–60	1–2	200– 2,000 nests	Collier 1968
	58	1	?	Orians 1961a
	59	1	600 birds	AFN 13(4):402, 1959
	71–72	1	2,000– 3,000 birds	Present study

TABLE 1. Number and Size of Tricolored Blackbird Breeding Colonies Reported Since 1933 and Found During 1968–1972, by Year and County—Continued

County	Year(s)	Colonies (range during years)		Source
		Number	Size	
		Northern California—southern Oregon		
Shasta (Ca.)	32–33	2–4	1,000– 18,000 nests	Neff 1937
	72	1	5,000 birds	Present study
Lassen (Ca.)	62	1	?	AFN 16(4):445, 1962
Modoc (Ca.)	70–71	1	125– 250 birds	Present study
Siskiyou (Ca.)	69–72	1–3	250– 10,200 birds	Present study
Klamath (Or.)	33	1	50 nests	Neff 1933
	71	2	180 nests	Present study
Jackson (Or.)	58	1	1,000 nests	AFN 12(4):379, 1958
	60	1	1,800 birds	Richardson 1961
	63	3	40 birds	AFN 17(5):479, 1963
	65	?	100+ birds	AFN 19(5):573, 1965
	70	2	?	Present study
		Coastal and southern California		
Marin	33	1	?	Neff 1937
Sonoma	71	4	150– 3,000 birds	Present study
Solano	32	1	6 nests	Neff 1937
Alameda	66	1	4,000 birds	AFN 20(4):545, 1966
	71	3	11,200 birds	Present study
Santa Clara	51	1	?	AFN 5(4):276, 1951
Santa Cruz	32	1	500 nests	Neff 1937
Monterey	32, 36	1–3	2,000– 4,000 nests	Neff 1937
	59	1	400 birds	AFN 13(4):398, 1959
	71	1	5,000 birds	Present study
Santa Barbara	36	1	3,000 nests	Neff 1937
	71	1	1,200 birds	Present study
Ventura	57–59	2–3	175– 1,800 nests	Collier 1968
Los Angeles	36	1	500 nests	Neff 1937
	59–60	1	300– 600 nests	Collier 1968
	71	1	2,500 birds	Present study
Riverside	43, 51	1	2,000 birds	AFN 5(5):309, 1951
	69–71	1–3	5,000– 15,750 birds	Present study
Orange	36	1	250 nests	Neff 1937
San Diego	32, 35–36	1–4	100– 3,000 nests	Neff 1937
	62	1	2,000 birds	AFN 16(4):448, 1962
	64	?	?	Payne 1965
	70–72	1–3	5,000– 9,000 birds	Present study

* Fall breeding colonies.
† AFN = Audubon Field Notes.

In several other areas, we saw flocks of tricolors during the breeding season without finding colonies (Figure 1). At Honey Lake (Lassen County), for example, about 20 males were seen singing in a tree. About 60 tricolors were sighted in a field near Yreka (Siskiyou County), and flocks of 100 to about 1,000 were seen near Chula Vista and near Otay Reservoir (San Diego County); near Los Alamos (Santa Barbara County); near Redding (Shasta County); near Moss Landing and on Hunter Liggett Military Reservation (Monterey County); and in the San Benito River Valley (San Benito County). Published records (Table 1) report tricolor breeding in all of these counties except San Benito.

Geographically, the breeding range of the tricolor has changed little during the past 30 years. Colonies are still found from southern Oregon south through Shasta County, California, and along the coast of California from Sonoma County to the Baja California border. Sporadic breeding also occurs in the plateau region of northeastern California and in the northwestern extremity of the Mojave Desert, but by far the majority of tricolors still breed within the Central Valley.

General Habitat

Within the Central Valley, breeding colonies were generally found in two major agricultural types—the rice lands of the Sacramento Valley and the pasturelands of the lower Sacramento Valley and San Joaquin Valley. In the rice lands, the annually flooded rice is the dominant crop, but small grains, hay, safflower, sugar beets, corn and beans are also grown. The pasturelands consist largely of irrigated fields of introduced grasses, alfalfa (grown for seed), hay, and small grains. In both areas, insects in flooded fields probably provide the primary food for breeding tricolors (Crase and DeHaven, manuscript in prep.).

Colonies outside the Central Valley were in several different habitat types. For example, at East Park Reservoir (Colusa County) and near Alberhill (Riverside County), breeding areas were surrounded by chaparral covered hills extending for several miles in all directions. A colony near Fallbrook (San Diego County) was surrounded by several hundred acres of orange and avocado groves interspersed with grass-covered hills a few acres in size. Two colonies in Alameda County were adjacent to the salt-marsh habitat of San Francisco Bay. At Clear Lake National Wildlife Refuge and at the Lava Beds National Monument (Siskiyou County) colonies were in sagebrush-grasslands.

Two southern California colonies probably best illustrate the tricolor's ability to breed under widely varying environmental conditions. A colony of about 2,500 adults was nesting in a small agricultural area near Del Sur (Los Angeles County), which is on the western edge of the Mojave Desert, and a group of several small colonies was found within the city limits of Santa Barbara (Santa Barbara County), about 274 m (300 yards) from the Pacific Ocean. Of the two sites, the desert breeding is probably more unusual, since the tricolor has apparently not invaded the man-made agricultural environment in the desert of the Coachella Valley (Riverside County), although less than 121 km (75 miles) of semi-desert separates the area from other breeding sites.

Nesting Substrate

The vegetation in which nests were built was recorded for 156 colonies (Table 2). Of these, 108(69%) had nests built in some kind of marsh vegetation—cattails (*Typha* sp.), bulrushes (*Scirpus* sp.), willows (*Salix* sp.), or some combination of these, and 76 (49%) were in cattails only. Other workers have also reported marsh vegetation as the major nesting substrate. In particular, of 256 colonies Neff (1937) found, 246 (96%) were in cattails, willows, and bulrushes. Orians (1961*a*) reported that 16 (64%) of the 25 colonies in the Sacramento Valley were in cattails and other emergents. And Collier (1968) found 27 (84%) of 32 southern California colonies in marshes or riparian willows.

The size, configuration, and plant density of the marshes used for nesting were extremely variable. Near Red Bluff (Tehama County), a 1,500-bird colony nested for 2 consecutive years in a burned-over cattail marsh where the vegetation was less than 0.9 m (3 ft) tall and nearly too sparse to support the nests (which were often only a few inches above the water); near Modesto (Stanislaus County) a colony of more than 1,000 birds nested in a strip of cattails only 3 m (10 ft) wide and 22.9 m (75 ft) long; near Arbuckle (Colusa County) adults nested in 3.7 m (12 ft) tall bulrush and cattail that was too thick for a man on foot to penetrate. In general, we observed no preference for a particular shape of marsh such as the broad circles or irregular polygons that Collier (1968) thought tricolors preferred.

We also found tricolors nesting in blackberry (*Rubus* sp.), mustard (*Brassica campestris*), thistle (*Centaurea* sp.), nettle (*Urtica* sp.), safflower (*Carthamus tinctorius*), and giant reed (*Arundo donax*) (Table 2). We know of no previous report of nesting in giant reed, although tricolors nested in this at least three times during our study (near Manteca, San Joaquin County, where 3,000 birds nested in 1971 and 1972, and near Del Sur where the 2,500-bird colony mentioned earlier nested near the desert).

TABLE 2. Number of Tricolored Blackbird Breeding Colonies by Nesting Substrate, 1968–1972

Nesting substrate	Number of breeding colonies found					Total (%)
	1968	1969	1970	1971	1972	
Cattail	2	13	20	28	13	76 (48.7)
Cattail, bulrush	1	2	7	8	5	23 (14.7)
Blackberries	--	6	4	11	4	25 (16.0)
Willows	--	1	1	3	--	5 (3.2)
Bulrush	1	1	1	2	2	7 (4.5)
Mustard, thistle	--	1	1	3	--	5 (3.2)
Thistle	--	--	--	2	--	2 (1.3)
Giant reed	--	--	--	2	1	3 (1.9)
Mustard	--	1	1	--	1	3 (1.9)
Nettles	--	1	--	1	--	2 (1.3)
Cattail, bulrush, willows	--	--	--	2	--	2 (1.3)
Mustard, safflower	--	--	--	1	--	1 (0.6)
Nettles, willows, blackberries	--	--	1	1	--	2 (1.3)
Total	4	26	36	64	26	156 (99.9)

Altitudinal Dispersion

Neff (1937) found colonies from sea level near San Diego and Santa Cruz to about 1,280 m (4,200 ft) on Klamath Lake. More recently, Collier (1968) reported a colony near Tehachapi (Kern County) at 1,158 m (3,800 ft) and Audubon Field Notes (16: 445, 1962) reported a colony near Susanville (Lassen County) at slightly over 1,219 m (4,000 ft). We found a similar altitudinal dispersion, with colonies ranging from sea level in Santa Barbara and near Alameda (Alameda

County) to 1,362 m (4,469 ft) at Clear Lake National Wildlife Refuge. However, altitudes in the Central Valley, where most colonies are located, are only about 6.1 to 121.9 m (20 to 400 ft) and those in the high-density tricolor breeding areas in Merced, Stanislaus and Sacramento counties (Figure 1) are only about 18.3 to 30.5 m (60 to 100 ft).

Fall Breeding

Although we were aware of possible fall breeding by tricolors in the Sacramento Valley (Orians 1960; Payne 1965), and in fact searched for colonies several times, we found only one instance of fall breeding. This was a colony of about 1,000 nests apparently all unsuccessful, in a cattail pond on the Sacramento National Wildlife Refuge (Glenn County) during November 1972. We do not know if fall breeding occurred in other parts of the species' range.

SIZE OF COLONIES

Numbers of Birds

We estimated the number of breeding birds at 157 colonies (Table 3). Of these, about 25% had fewer than 1,000 birds, about 62% had from 1,000 to 10,000 birds, and 13% had more than 10,000 birds.

TABLE 3. **Number of Tricolored Blackbird Breeding Colonies by Size Classes, 1968–1972**

Size class (number of breeding birds)	Year					Total (%)
	1968	1969	1970	1971	1972	
Fewer than 1,000	--	1	11	20	8	40 (25.5)
1,000 to 9,999	2	17	25	36	17	97 (61.8)
10,000 to 25,000	2	8	--	7	2	19 (12.1)
More than 25,000	--	--	--	--	1	1 (0.6)
Total	4	26	36	63	28	157 (100.0)

The smallest colony, 15 birds, was observed in 1971 near Folsom (Sacramento County). All large colonies were in the Central Valley. The largest, about 30,000 birds, was observed in 1972 near Knights Landing (Yolo County). Others, each containing about 20,000–25,000 birds, were: near Tudor (Sutter County) in 1968; near Colusa in 1969 and 1971 and near Dunnigan in 1969 (Colusa County); near Clay and near Galt in 1971 (Sacramento County); near Corcoran (Kings County) in 1971; and near Knights Landing in 1969.

The colonies outside the Central Valley all contained fewer than 10,000 tricolors. West of the valley, for example, the three largest colonies were in the San Francisco Bay area (Alameda County), and each had about 5,000 breeding birds. North of the valley, the largest colony had about 1,250 birds at Tule Lake National Wildlife Refuge.

TABLE 4. **Nesting Densities of Tricolored Blackbirds in Breeding Colonies by Nesting Substrate, 1968–1972**

Nesting substrate	Number of colonies	Area occupied by nests (acres)		Number of birds per acre*		Number of active nests per acre*	
		Range	Average	Range	Average	Range	Average
Giant reed	2	0.01– 0.25	0.17	12,000–200,000	106,000	8,004–133,340	70,670
Blackberries	15	0.02– 1.25	0.41	750–100,000	24,532	500– 66,670	16,355
Mustard	2	0.25– 0.33	0.29	700– 1,000	8,500	467– 667	5,667
Mustard, thistle	6	0.05–10.00	1.80	400– 30,000	7,240	267– 20,000	4,827
Willow trees	5	1.00– 2.33	1.67	1,000– 20,000	6,550	667– 13,340	4,367
Cattails and/or bulrush	77	0.05–10.00	1.62	400– 30,000	5,024	267– 20,010	3,350
Thistle	1	--	1.25	--	3,000	--	2,000
Mustard, safflower	1	--	0.04	--	313	--	209
Total	109						

* Some bird census figures were estimated from nest counts and some nest density figures from bird counts; these estimates were based on a male:female ratio of 1:2 and a female:active nest ratio of 1:1.

(About 10,000 tricolors were reported there early in the spring of 1969, but the birds apparently did not all nest in one colony.) South of the valley, the largest colony was about 2,500 birds in San Diego County. A cooperator reported that a colony of about 10,000 birds nested near Temecula (Riverside County), but we did not confirm this estimate.

Nesting Area and Density

The number of birds or nests and the area they occupied were estimated for 109 colonies (Table 4). Nesting areas varied widely with the size of the colony and the type and size of the local nesting substrate, but generally nests were built in only a fraction of the total area available. Also, areas occupied by more or less continuous nesting were smaller in upland habitats than in marshes. Continuous nesting areas in blackberries averaged .17 ha (0.41 acre); in all other upland types they averaged .33 ha (0.82 acre). In contrast, nesting areas in marshes averaged .65 ha (1.62 acres). In several marshes, nesting was nearly continuous on at least 1.6 ha (4 acres) of the available habitat. The largest areas of continuous nesting recorded were on about 4.1 ha (10 acres) of mustard and thistle in Alameda County where 5,000 birds nested, and on 10 acres of cattails (part of a 10.1 ha (25-acre) marsh) in Colusa County where more than 20,000 birds nested.

The greatest nesting density was at the Del Sur colony, where 2,500 tricolors built nests in an area of giant reed only about 12.8 x 3.9 m (42 x 13 ft) (1/80 acre); this is equivalent to about 200,000 birds, or 133,340 nests, per acre. Two sites with extremely sparse nesting densities were a 15-bird colony at Folsom (in blackberries), and a 50-bird colony at Tule Lake National Wildlife Refuge (in mustard and thistle), where densities were only about 750 birds per acre. Overall, nesting was densest in giant reed and blackberries; intermediate in mustard, mustard-thistle, and willow; and sparsest in cattails, bulrush, and combinations of these (Table 4).

POPULATION SHIFTS

Seasonal

Colony abandonment provided evidence of population shifts during the nesting seasons. During the survey, we made repeated visits to about one-third of all the colonies found, and of these, about 10% to 50% were partially or completely abandoned each year. The observed abandonment occurred throughout each nesting season, although, like Neff (1937), we observed it more often early in the year. In April 1970, for instance, we found about 10,000 tricolors at four breeding colonies in southeastern Sacramento County. The birds were building nests or incubating eggs. Within a few days, all four had been abandoned, and there was no later breeding in the area that year. Abandonment likely is related to insufficient food supplies for the breeding birds and their young (Lack 1954; Orians 1960, 1961*a*).

Yearly

We also observed substantial yearly variation in the centers of breeding abundance. In several counties in the Central Valley where man-days spent searching was fairly constant each year from 1969 through

1972, the number of colonies and breeding birds usually differed greatly between years (Tables 1 and 5). For example, in 1969 at least 57,000 tricolors nested in Colusa County, but in 1970 there were only about 2,000. Similar fluctuations occurred elswhere in the Central Valley.

Neff (1937), Orians (1961*b*), and Orians and Collier (1963) also reported that the breeding distribution of the tricolor was somewhat unpredictable from year to year. Orians (1960; 1961*a*), however, stated that the tricolor's center of breeding abundance and the largest colonies were in the rice-growing area of the Sacramento Valley. Our data show that this is not true for all years. Only 5 of the 10 largest colonies of our study were in the major rice district. Furthermore, in 1969 and 1972 about 58% and 59% of all the breeding tricolors were in five major rice-growing counties, but in 1970 and 1971 only about 32% and 29% were (Table 5). In 1971 we found only 49,000 tricolors nesting in the five major rice counties, compared to the largest breeding population (about 51,000 birds) which nested within a few square miles in the pasturelands of southeastern Sacramento County.

These yearly shifts, which are likely related to insect supplies and other, unknown, breeding requirements, may operate as follows: During winter, many tricolors leave the Sacramento Valley rice areas. Probable major wintering areas are the San Francisco Bay-Delta area and the northern San Joaquin Valley (Neff 1937, 1942; Orians 1961*a*; Payne 1965; and DeHaven et al., manuscript in prep.). When spring arrives, tricolors disperse from these wintering areas to search out sites with the proper requirements for breeding, of which an abundance of insects is probably most critical (Orians 1961*a*; Orians and Collier 1963; Payne 1965; and Lack 1954). Movement is probably mainly northward from wintering locations because areas with acceptable nesting substrates are relatively scarce in the arid southern San Joaquin Valley.

Although population shifts occurred each year, there were a few local areas, such as the pasturelands in Merced County near Gustine and Los Banos and in Stanislaus County along the San Joaquin River, where breeding was somewhat regular and predictable. Neff (1937) also found regular breeding in the Merced County area which, judging from his descriptions, seems to have changed little. However, probably the most consistently used area during our study was the pasturelands in southern Sacramento County, where we found 6, 8, 11, and 4 colonies during the years 1969–1972.

A few specific breeding sites outside of the Central Valley were regularly used. A cooperator reported that near Temecula a colony was active during 1967–1971. Colonies at Tule Lake and Lower Klamath National Wildlife Refuges were active during all years of the study. A land owner reported that one of the colonies we found near Santa Barbara had been active for at least 25 years, and according to Bent (1965), Nuttall first described the species from this or a nearby area in 1836, and listed it as common in April.

TABLE 5. **Number of Tricolored Blackbirds Breeding in Major Rice-Growing Counties of the Sacramento Valley, California, 1969–1972**

Year	Number of breeding birds found							Percent total found in major rice counties
	In all counties	In major rice counties*						
		Colusa	Butte	Glenn	Yolo	Yuba	Total	
1969	181,000	57,000	20,000	2,000	25,000	1,000	105,000	58.0
1970	84,850	2,000	1,500	18,500	5,000	5,250	32,250	38.0
1971	167,540	26,000	2,500	5,500	15,150	--	49,150	29.3
1972	97,850	25,000	500	1,000	31,000	--	57,500	58.8
Total	532,040	110,000	24,500	27,000	76,150	6,250	243,900	45.8

* No colonies were found in Sutter County, a major rice-growing area, during 1969–1972.

LONG-TERM POPULATION CHANGES

The findings of our survey were similar in many respects to those of Neff (1937) who first studied tricolor populations some 35 years earlier. There were, however, several striking differences:

1) We found fewer colonies than Neff (1937). During 6 years of study (1931–1936), he devoted an average of about 31 man-days a year to specific searches for tricolor colonies, and listed a total of more than 256. (His listing, like ours, included a few records supplied by cooperators.) Even with our better transportation, more roads providing access to colonies, and about 45 man-days a year specifically devoted to searches, in 4 years we found only 164 colonies.

2) We saw fewer non-breeding tricolors than Neff (1937). He estimated that "unattached bands observed during the [6 years of] field work totaled considerably more than 50,000 birds." During 4 years, we observed fewer than 15,000.

3) We did not find any nesting areas approaching the size of some Neff (1937) reported. For example, he described a large colony in Glenn County where the birds were "active [in nest building] over an area roughly 6.4 km (4 miles) east and west by 9.6 km (6 miles) north and south." He estimated that another colony in Glenn County contained at least 260,000 nests and covered virtually 24.3 ha (60 acres). Our most extensive colonies had continuous nesting over only about 4 ha (10 acres). (One large colony of about 25,000 birds was found in a 32.3-ha (80-acre) safflower field, but we do not know if nesting was continuous throughout the field. The colony was abandoned during egg-laying.)

4) Our largest colonies apparently contained far fewer birds than Neff's (1937). He listed five colonies with at least 75,000 nests (equivalent to about 112 500 birds). Our largest colony contained only about 30,000 birds, and fewer than 20,000 of these actually completed their nesting cycle. In attempting to estimate the population of his largest colony (in Glenn County), Neff "gave up in despair with the thought that an estimate of 250,000 adults was ridiculously low." This figure is considerably larger than the highest yearly total we recorded for all colonies (181,800 birds), in 1969.

5) We found fewer total tricolors than Neff (1937). During his 6 years of study, he found more than 1.5 million nests, equivalent to more than 2.2 million breeding birds, or more than 375,000 a year. During 1969–1972, we found about 532,000 breeding birds, or about 133,000 a year. The difference was especially obvious in the major rice-growing counties (Butte, Colusa, Glenn, Sutter, Yolo and Yuba) of the Sacramento Valley where Neff (1937) found all of his very large colonies, and an average of about 161,000 nests, or more than 241,000 breeding birds a year. In comparison, our 4-year total for the major rice-growing counties was about 244,000 birds (Table 5).

Tricolors have apparently not benefited from increasing rice culture in the Central Valley as suggested by Neff (1937) and Orians (1961*a*, 1961*b*). Rice acreages have increased nearly fourfold during the last 30 years, from about 50,625 ha (125,000 acres) during the 1940's to nearly 202,500 ha (500,000 acres) in 1954, then down to 91,530 ha

(226,000 acres) in 1957, and finally to 174,960 ha (432,000) acres in 1968 (Johnston and Dean 1969). Thus, if rice culture is beneficial to the tricolor, then this benefit must have been offset by one or more detrimental factors. Perhaps the increase in land use and intensified pesticide use in recent years have limited the food supplies essential for tricolor breeding.

There is no question that suitable nesting habitat for tricolors has been lost in some local areas. For example, Neff (1937) and later Lack and Emlen (1939) studied colonies near Davis (Yolo County), but little or no nesting habitat exists there now and we found no breeding. There is now no nesting habitat near Riego Road in Sacramento County where Orians (1961*a*) found several colonies. South of the Central Valley, Collier (1963) studied colonies at Cache Creek (Kern County), which has since been covered by a freeway, and at San Fernando Reservoir (Los Angeles County), which has been drained for housing development. Nevertheless, we doubt that local losses of habitat have contributed significantly to any overall population decline. In fact, like Neff (1937), we found that tricolors in most areas, including the Sacramento Valley, leave many marshes and other apparently suitable nesting sites unused each year. Clearly, further research on the requirements for tricolor breeding is needed to help isolate a possible cause for the species' apparent decline.

Also important are the questions of when the decline began and whether it is continuing. Unfortunately, none of the studies conducted between Neff's (1937) and ours are complete enough to draw conclusions about total population size in even a portion of the tricolors' range. However, if significant observer differences can be ruled out, the fact that Orians (1961*a*) found three colonies with 50,000 to 100,000 nests in the Central Valley as recently as the early 1960's could indicate that the decline is relatively recent. Further research is needed to determine whether this downward trend, which may have reduced the Central Valley population by more than 50%, is continuing, and whether it has yet reached the point of concern.

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Understanding the contribution of habitats and regional variation to long-term population trends in tricolored blackbirds

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Abstract

Population trends represent a minimum amount of information required to assess the conservation status of a species. However, understanding and detecting trends can be complicated by variation among habitats and regions, and by dispersal connecting habitats through source-sink dynamics. We analyzed trends in breeding populations between habitats and regions to better understand the overall dynamics of a species' decline. Specifically, we analyzed historical trends in breeding populations of tricolored blackbirds (*Agelaius tricolor*) using breeding records from 1907 to 2009. The species breeds itinerantly and ephemerally uses multiple habitat types and breeding areas, which make interpretation of trends complex. We found overall abundance declines of 63% between 1935 and 1975. Since 1980 overall declines became nonsignificant and obscure despite large amounts of data from 1980 to 2009. Temporal trends differed between breeding habitat types and were associated with regional differences in population declines. A new habitat, triticale crops (a wheat-rye hybrid grain) produced colonies 40× larger, on average, than other breeding habitats, and contributed to a change in regional distribution since it primarily occurred in a single region. The mechanism for such an effect is not clear, but could represent the local availability of foodstuffs in the landscape rather than something specific to triticale crops. While variation in trends among habitats clearly occurred, they could not easily be ascribed to source-sink dynamics, ecological traps, habitat selection or other detailed ecological mechanisms. Nonetheless, such exchanges provide valuable information to guide management of dynamic systems.

Introduction

For populations, temporal trends in abundance represent an important type of information on which to base conservation and management decisions. It is therefore important to understand the causes of population trends, and reasons why such trends vary geographically, temporally or among species. While there are many natural and anthropogenic causes of sustained population declines (negative population trends), frequently identified factors include habitat loss and fragmentation (e.g., Virkkala 1991; Donovan and Flather 2002; Sirami et al. 2009), reduction in habitat quality (Benton et al. 2002), natural enemies (Schmidt 2003), harvesting (Fryxell et al. 1988), climate change (Winfield et al. 2010), non-native invasive species (Gurevitch and Padilla 2004), and alteration of disturbance regimes (Holmes and Sherry 2001). Nonetheless, temporal trends are sometimes complex to interpret and detect for reasons that include the limitations of statistical methods and the biology and physical structure of the study system. Perhaps the

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most challenging systems in which to understand population trends are those that include multiple habitat types and where movement patterns among different habitat areas are largely unknown – which is the case in many systems.

Spatial variation in demography and mixing of populations can arise from geographical variation (Morrison et al. 2010), spatial-scale dependence (Houlahan et al. 2000), and involvement of multiple connected habitat types (e.g., Virkkala 1991). Species showing habitat-specific demography may show variation in trends across habitats. Also, in source-sink systems (Pulliam 1988), regular dispersal among habitat types may blur habitat-specific trends. Similar problems of spatial scale dependence and effects of dispersal are expected from ecological traps (reviewed by Robertson and Hutto 2006) and species showing habitat selection behavior. For example, habitat preference might mask population trends if only preferred habitats were monitored and if these sites were buffered from population declines by immigration from less-preferred habitats (Rodenhouse et al. 1997). Trend detection and interpretation is also complicated for nomadic or itinerantly breeding species, which are expected to be especially likely to show switches among habitat types and regions. Such species also frequently show rapid population growth in response to favorable environmental conditions or food availability (Orians 1961), which would create naturally variable population sizes and these would be expected to hinder trend detection. Surprisingly there have been few analyses of trends that consider multiple habitat types and real-world complexities such as those listed above (although see Helle and Järvinen 1986; Rodenhouse et al. 1997).

Long-term population studies are especially valuable for their ability to identify population dynamic patterns. We investigated population trends spanning >100 years across a large portion of the geographic range for a colonially nesting, itinerantly breeding songbird of conservation concern. Tricolored blackbirds (*Agelaius tricolor*) are a striking example of a range-restricted colonial bird that has experienced a major decline in the last 80 years (e.g., Beedy and Hamilton 1999). However, the relative contribution of different factors to the decline is poorly known, including the effect of any changes in use of different types of breeding habitats. Likewise we do not know the extent of any decline during recent decades. Previous studies have tabulated population sizes but have not statistically analyzed population data (DeHaven et al. 1975; Beedy et al. 1991; Beedy and Hamilton 1997; Hamilton et al. 1999).

In this study we analyzed the most extensive dataset yet compiled for the species, comprising 2463 records of the sizes of breeding colonies. As the species are broadly dispersed in mixed species flocks during winter, breeding surveys are the most practical method to investigate population trends. We performed the first systematic statistical evaluation of trends for tricolored blackbirds to address five questions: (1) What is the magnitude of the overall decline, and is it continuing? (2) Do trends vary across regions? (3) Do trends vary among breeding habitat types? (4) Has there been a change in the net geographic distribution of the species? (5) Are changes in regional distribution linked to changes in habitats used for breeding? We use our findings to derive management and research recommendations.

The study species

The most extensive reports of tricolored blackbird population status indicate range-wide breeding abundance declines of ~89% between the 1930s and 1980s (Beedy et al. 1991). The species is the most colonial passerine in North America since the extinction of passenger pigeons (Bent 1958). Concentration of breeding in large colonies makes the species especially vulnerable to dramatic nesting failures (Beedy and Hamilton 1999; Cook and Toft 2005; Meese 2013). The species is largely endemic to California (>99% of birds), with small populations in adjacent states and Baja California, Mexico. Since the 1930s, over 90% of the individuals nested in wetlands of California's Central Valley (Neff 1937; Orians 1961; DeHaven et al. 1975). This area experienced wetland losses of greater than 90% between 1850 and 1980 (Frayer et al. 1989), and ~99% loss of grassland habitats that are used for foraging by tricolored blackbirds (Beedy and Hamilton 1997). For tricolored blackbirds, Beedy et al. (1991) reported wetland loss and fragmentation as the principal reasons for decline. Yet, the species has also changed from predominantly breeding in freshwater cattail (*Typha* spp.) and bulrush (*Scirpus* spp.) marshes (Neff 1937) to increasingly include upland non-native and agricultural habitats as breeding sites (Beedy and Hamilton 1997). Such changes could complicate our interpretation and detection of population declines. Tricolored blackbirds also exhibit semi-nomadic behavior and itinerant breeding (Orians 1961; Hamilton 1998), making it hard to accurately assess overall status.

There have been several previous descriptions of tricolored blackbird populations. Neff (1937) recorded over 736,000 adults in 1934 in just eight counties, and during 5 years recorded 252 colonies in 26 counties, with the largest being over 300,000 birds. DeHaven et al. (1975) reported that populations declined by at least 50% between the 1930s and 1970s, with average annual counts in the 1970s of 133,000 birds. Beedy and Hamilton (1997) questioned this finding because the 1970s surveys did not include large breeding colonies in the southern San Joaquin Valley. Conversely, Beedy et al. (1991) reported continued declines since the work of DeHaven et al. (1975), with an annual average of 52,000 adult

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breeding birds per year in the 1980s. Finally, Hamilton et al. (1999) reported continued declines (since the 1970s) based on extensive surveys in the 1990s. Trends in abundance have not been systematically and statistically analyzed. It is possible that the decline has slowed since the 1970s because of breeding in nonnative upland habitats (Himalayan blackberry, *Rubus armeniacus*, and some cereal grain fields), from which Cook and Toft (2005) reported higher nesting success than from native marshes. Meese (2013) found that insect abundance in foraging habitats was correlated with reproductive success but that no such native versus nonnative breeding habitat effect on reproductive success was found. Meese's (2013) work distinguished breeding substrates where colonies nest from foraging habitats that were up to 9 km from colonies. Such a separation of habitat types is more detailed than most literature reports, and in the present article we refer to "breeding habitat" as the substrate in which nests are located.

Cited reasons for decline of tricolored blackbirds include loss of breeding and foraging habitats, pesticide usage, disturbance through agricultural harvesting, predation (e.g., by herons and egrets; Meese 2012), occasional deliberate poisonings with avicides to protect crops, and early 20th century market-harvesting of blackbirds (Neff 1937; Beedy et al. 1991; Beedy and Hamilton 1997). More broadly, agricultural intensification has been linked to songbird declines in farmland (Donald et al. 2001; Benton et al. 2002; Wretenberg et al. 2007). There is a substantial scope for conflict between tricolored blackbirds and agriculture. This is because a large proportion of tricolored blackbirds occur in California's agriculturally intensive Central Valley (DeHaven et al. 1975) and recent occurrence of large colonies in triticale fields (a wheat-rye hybrid, and an acronym of *Triticum* [wheat] and *Secale* [rye]) that are frequently at risk of being destroyed during harvest while nests are still active. Increased occurrence in the San Joaquin Valley (southern part of the Central Valley) is anecdotally reported to be linked to a decline in the dairy industry in Southern California, raising the possibility that there was movement of birds away from Southern California. Hence, farming practices may have large effects on tricolored blackbirds.

The tricolored blackbird receives legal protection by the Migratory Bird Treaty Act. A petition to list the species as threatened or endangered under the U.S. Endangered Species Act was declined in 2006 because of inadequate information (Federal Register 2006). However, it has been classified as a nongame species of management concern since 1995 (U.S. Fish and Wildlife Service 1995) and California Species of Special Concern since 1990. Additionally, the Bureau of Land Management listed it as a sensitive species since 1999 (Bureau of Land Management 2006), and it has been on the IUCN red list of endangered species since 2006 (IUCN 2011).

Materials and Methods

Data sources

Breeding censuses are often the most practical way to record widespread changes in population status of songbirds (e.g., see Link and Sauer 1998, for the North American Breeding Bird Survey). We compiled data and used those from the public Tricolored Blackbird Portal (http://tricolor.ice.ucdavis.edu/), an online database for recording observations of tricolored blackbird breeding colonies, including their locations, habitat used for nesting, occupancy, estimates of numbers of breeding birds, and records of observations of color-banded birds. We entered historical records from literature sources into the Tricolored Blackbird Portal. Our analyses used records from 1907 to 2009, reflecting that we initiated our analyses late in 2009. The portal was also used for participants in the 2008 statewide census to enter their observations (Kelsey 2008). Of the 2463 total records in the database, 29.2% (n = 719) were from published manuscripts and 70.8% (n = 1744) were from gray-literature reports. These reports primarily represent volunteer-based statewide surveys sponsored by the USFWS conducted in 1994, 1997, 1999, 2000, 2001, 2005, and 2008 (Hamilton et al. 1995; Beedy and Hamilton 1997; Hamilton et al. 1999; Hamilton 2000; Humple and Churchwell 2002; Sloat 2005; Hamilton and Meese 2006; Kelsey 2008). See "Additional data entry procedures" section in Appendix for additional details that relate to subsets of the data. All plant species names are given in Appendix Table A1.

Statistical analyses

Reported locations of tricolored blackbirds that were not nesting locations were excluded from analyses. The number of birds per breeding record was used as the most accurate available metric of bird abundance. We also examined total abundance within regions, although we note that such an index is subject to variation caused by sampling effort. The most comprehensive tabulation of historical population abundances, by Beedy et al. (1991), found the main declines to occur between the "1930s" and "1970s". We used the years 1935 and 1975 to be equivalent to and facilitate comparison with these earlier reports. To evaluate recent population trends, we selected 1980 data onward since it allows 30 years of data since that time (1980–2009 inclusive), giving a reasonable sample size for time-series analyses of trends and to encompass the time period after which Beedy

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et al. (1991) reported population declines. In addition, the 1980s represent a period when some large-scale changes in geographical distribution were observed, with regional formation of large colonies in the southern Central Valley of California that may have been attributed to increases in crops like triticale and growth of the dairy industry. The choice of 1980 as a cut-off rather than another year (e.g., 1975, 1985) did not change the significance of our results for recent trends. For sites with multiple visits per year we used the peak recorded abundance per site as the best available estimate of abundance.

Abundance data were natural logarithmically transformed to meet assumptions of normality. All statistical tests were performed in *Statistica 6.0* (Statsoft Corp., Tulsa, Oklahoma). To test for trends we used linear regression to test the slope of ln(birds per breeding record) versus year number, both in an overall test using all data and in a separate test using just data after 1980. Durbin–Watson tests on residuals tested for temporal autocorrelation. As a check on data consistency through time we also looked at the CV of abundance (see "Population variability" section in Appendix).

General linear models (GLMs) were used to test for differences in temporal trends in ln(abundance) among geographic regions and common breeding habitats in separate tests. Attempting to combine these analyses to maximize the comparability of results gave us an either/or choice: general linear models could contain region × year or habitat × year, and the significance depended on what was already in the model; also models with region × year or habitat × year had a ΔAIC of <2, suggesting no justifiable difference in support for each model. The interaction between region or habitat and year was used to test for differences in slopes, representing the strength of temporal trends. Model parameter estimates and standard errors were used to identify means that varied for factors significant at $P < 0.05$. As a measure of effect size, the proportion of variance explained by explanatory variables was compared using partial eta-squared $(h^2) = (SS_{effect})/(SS_{effect} + SS_{error})$. Finally, we also reran the statistics using linear mixed effects models using function lmer (in package lme4) in R (R Development Core Team 2011) to check that the results held up if year and/or region or location were used as random factors to account for the correlated error structure in the data, and also using Poisson errors rather than Gaussian errors: none of these refinements changed the results obtained, and we therefore present the simpler results that we originally obtained. We used G-tests to test whether the proportion of records in different habitats varied among regions; in these analyses we excluded habitats with <5% of records across all regions.

Results

Population status and the extent of declines

The database contained 1964 records of breeding or nonbreeding birds, from 1183 different sites in 46 counties. It included 501 additional records from known prior locations where no birds were recorded that were not used in our analyses. Breeding was recorded at 74% (880) of the 1182 recorded sites (breeding was unclear at one site). There were 243 sites with multiple records of breeding birds. Hence, 28% of the 880 breeding sites were used in multiple years, and this likely represents a minimum estimate because frequently data were lacking about whether sites were revisited to check continued breeding.

Overall the number of birds per record (colony size) declined significantly and substantially from 1935 to 1975 (Fig. 1A; these years are chosen to be consistent with reports in the literature – see Discussion). Mean breeding colony size was estimated as 2103 birds in 1935, compared with 780 birds in 1975 (from regression in Fig. 1A). Hence, mean abundance per breeding site declined by 63% from 1935 to 1975, but much variation remains unexplained (Fig. 1A; from the regression $r^2 = 11\%$). In contrast, we did not find evidence for a decline in average colony size from 1980 onwards. A regression of ln(abundance) versus year for breeding colonies from 1980 onwards was not significant despite having 1572 degrees of freedom ($t_{1572} = -1.60$, $P = 0.11$). A power test showed that with $\alpha = 0.05$ and sample size the same as that after 1980 the regression of ln(abundance) versus year provided power of $\beta = 0.82$ for a slope (trend magnitude) the same as that observed prior to 1980. To detect a slope of just 20% of the observed pre-1980 magnitude, these data provide power of $\beta = 0.62$. Hence, power was reasonable even to detect low rates of decline.

Regional declines and habitat types

As described in more detail in the following paragraphs, we found geographical variation in tricolored blackbird breeding population trends, as shown by the average size of breeding colonies (Fig. 1; Table 1). Like the size of breeding colonies, total populations changed substantially, as exemplified by comparing pre-1980 data to those from 1980 onwards (Fig. 2A and B). There were also different frequencies of breeding habitat types across regions (Fig. 3) and there were some corresponding differences in temporal trends among habitat types (Fig. 4, Table 2). Regions are defined in Figure 2C. A caveat for all of our analyses is that region explained only 20.8% of variation in trends in average breeding colony size (Table 1), and the comparable figure for habitat type was only 14.5% of

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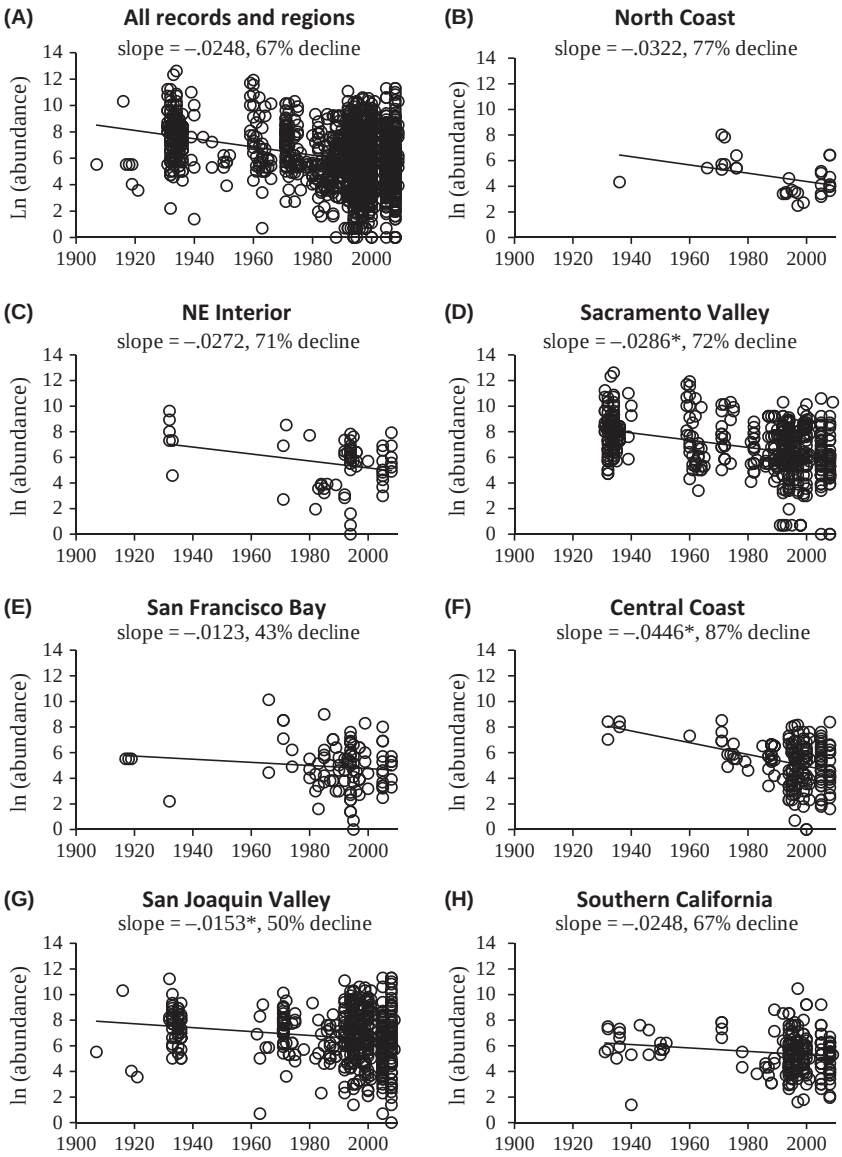

Figure 1. Trends in ln(abundance = colony size) for (A) all breeding colonies and colonies within geographic regions (B–H; see Fig. 2C for region definitions). The lines show results of linear regressions detailed below for A, and in Table 1 for B–H. For all years in A, ln (abundance) = 55.62 − 0.02479 × year (e.g., 2009); t_{675} = 9.0, $P < 0.001$; adjusted r^2 = 0.11 (11% of variation); residuals autocorrelation was weak, that is serial autocorrelation coefficient of 0.27. (B–H) Compared with all other regions the Central Coast had larger colonies in earlier years but declined more rapidly, and the San Joaquin Valley showed smaller colonies in early year that declined less rapidly. Regression slopes of ln(abundance) of breeding birds versus year are given, and in B–H asterisks indicate a difference $P \approx 0.05$ between Southern California (as indicative of a representative trend—compare A and H) and the region indicated by an asterisk. The % decline in mean breeding colony size (number of birds) from 1935 to 1980 is also given as a measure of historical decline.

the variation (Table 2); this variation is also shared by terms in the general linear models that we used to examine trends, so that the amount of variation in trends explained by differences among regions or habitats is quite small (see h^2 values Tables 1 and 2).

All regions showed negative trends in average breeding colony size through time but there was some variation between regions in the rate of decline. In 1935 the Central Coast had 72% larger colonies than the average across all regions but subsequent to this these sites declined 80% more rapidly than colonies in other regions (Table 1; Fig. 1F). Compared with other regions (Fig. 1B–E, G, and H), San Joaquin Valley colonies were 32% smaller ($P = 0.08$) in 1935 (except the Central Coast), but declined at a 38% slower rate after this ($P = 0.06$; Table 1, Fig. 1G). Other geographical regions did not vary from one-another in the trends observed. Figure 2 summarizes net changes in both the numbers of birds per breeding colony (Fig. 2A) and the total annual number of breeding birds per year in each region from 1935 to 1980 (Fig. 2B). Sacramento Valley and San Joaquin Valley both stand out in having had a large number of records relative to other regions prior to 1980. For the Sacramento Valley the typical statewide negative trend in average breeding colony size reported above (Fig. 1A and D) was accompanied by a large decline in the total regional breeding population per year in that region (Fig. 2B). Conversely, the San Joaquin Valley showed both a less severe (and marginally significant) trend in average colony size compared to other regions (Fig. 1G) and the

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Table 1. Results of a general linear model testing for differences in ln (abundance) versus year of reporting for breeding records among geographical regions.

	SS	df	MS	*F*	*P*	h^2
Intercept	159.05	1	159.05	47.56	0.001	0.030
Region	52.98	6	8.83	2.64	0.015	0.010
Year	128.59	1	128.59	38.46	0.001	0.024
Region × Year	52.92	6	8.82	2.64	0.015	0.010
Error	5286.73	1581	3.34			

Parameter type	Region	Parameter	SE	*t*	*P*
Intercept	Southern California	54.921	7.963	6.90	0.001
Difference in intercept	Central Coast	39.277	19.601	2.00	0.045
Difference in intercept	North Coast	13.907	32.651	0.43	0.670
Difference in intercept	Northeast Interior	4.584	20.727	0.22	0.825
Difference in intercept	Sacramento Valley	8.469	9.274	0.91	0.361
Difference in intercept	San Francisco Bay	−25.641	19.921	−1.29	0.198
Difference in intercept	San Joaquin Valley	−17.755	9.990	−1.78	0.076
Slope	Southern California	−0.0248	0.0040	−6.20	0.001
Difference in slope	Central Coast	−0.0198	0.0098	−2.02	0.044
Difference in slope	North Coast	−0.0074	0.0164	−0.45	0.651
Difference in slope	Northeast Interior	−0.0024	0.0104	−0.23	0.821
Difference in slope	Sacramento Valley	−0.0038	0.0047	−0.81	0.417
Difference in slope	San Francisco Bay	0.0125	0.0100	1.25	0.211
Difference in slope	San Joaquin Valley	0.0095	0.0050	1.89	0.059

The whole model adjusted R^2-value was 20.8%. The first part of the table reports standard ANOVA table values and the second part reports parameter values. Effect size is given as the proportion of variance explained by explanatory variables, partial eta-squared $(h^2) = (SS_{effect})/(SS_{effect} + SS_{error})$. For Southern California the intercept and slope are shown, whereas differences from these values and significance of these differences are given for other habitats.

total regional breeding population actually increased from pre-1980 to 1980 onwards. After 1980 the San Joaquin Valley on average held more breeding birds than any other region (Fig. 2B), whereas prior to 1980 the Sacramento Valley held far larger populations than any other region.

The frequency of breeding habitat types varied significantly between regions (Fig. 3; $G_{40} = 93.8$, $P < 0.001$; "Use of different breeding habitat types" section in Appendix gives additional detail on frequencies of use of all habitat types statewide). Breeding colonies in cattail marshes were more frequent than the statewide average in the Sacramento Valley and Southern California, and less frequent than the statewide average in the San Joaquin Valley (Fig. 3B). Triticale is not shown in Figure 3, but all records were from the San Joaquin Valley and just to the north of there in Sacramento County. Bulrush sites were more frequent than the average across regions in the Central Coast, San Francisco Bay and Southern California, and less frequent than average in the Sacramento Valley (Fig. 3C). The Sacramento Valley had far more sites with Himalayan blackberry than the statewide average, and the San Joaquin Valley and Southern California had less blackberry sites than the statewide average (Fig. 3A). Stinging nettle sites were disproportionately frequent in Northeast Interior breeding sites (Fig. 3D), as was thistle in San Francisco Bay region (Fig. 3E).

Temporal trends in mean colony size also varied between habitats (Table 2; Fig. 4). In general, colony size declined through time except for colonies in native stinging nettles, which showed no temporal change in size (Table 2; Fig. 4D). It is surprising that population sizes declined even within existing marsh habitats (Fig. 4B and C). It is not clear whether such a decline represents a reduction in area of the breeding habitat occupied or whether it is attributable to another factor such as changes within foraging habitat or quality of breeding habitat. Colonies in cattails were 34% larger in the early years of records compared to those in blackberry, bulrush, and thistle, but declined 38% more rapidly (Table 2; Fig. 4B). Colonies in Himalayan blackberry, bulrush, and thistle did not differ significantly from one-another in size or rate of decline (Table 2; Fig. 4A, C, and E). Small sample size and all records being relatively recent prevented us from analyzing temporal trends in triticale, which had 14 breeding records in the database from 13 locations between 1999 and 2009. Average colony size was markedly larger in triticale (mean = 24,871 birds, SE = 7697 birds) than other habitats (mean = 639 birds, SE = 1.1, $n = 193$; Student's $t_{205} = 3.04$, $P < 0.01$).

Discussion

Population status and the extent of declines

The substantial breeding population declines of tricolored blackbirds that we found from 1935 to 1980 (Fig. 1A) are consistent in magnitude with earlier reports, but much variation remains unexplained. We found a 63% decline in breeding abundance (mean colony size) from 1935 to 1975, whereas Beedy et al. (1991 – from data in their

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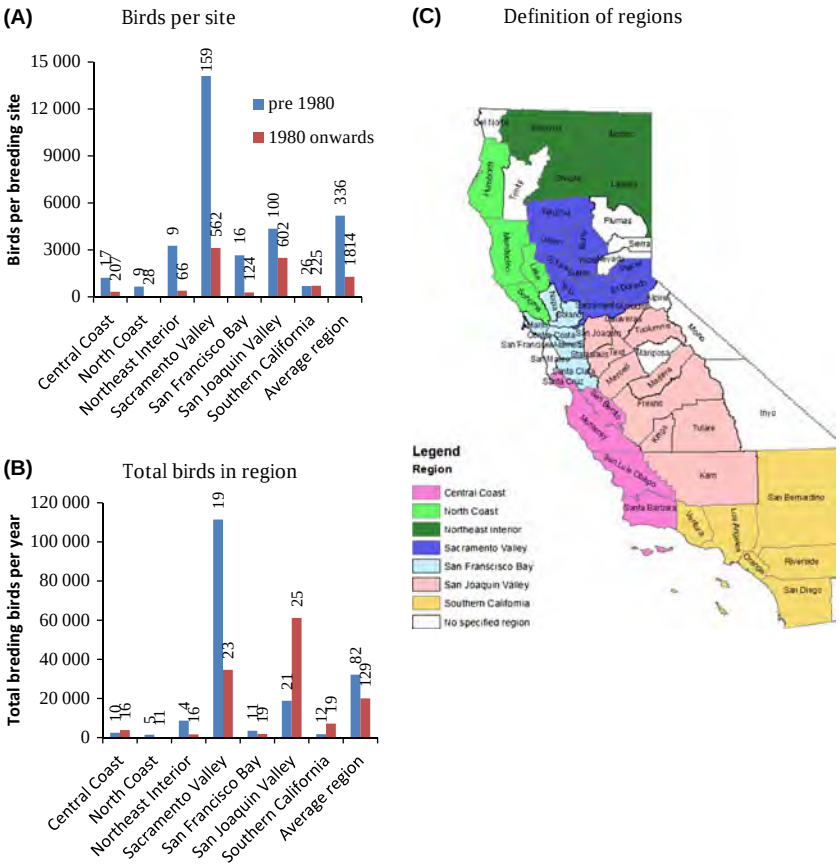

Figure 2. (A) Average of maximum number of breeding birds per colony per year, and (B) total number of breeding birds recorded per year in each region during the periods before 1980 (blue bars) and from 1980 to 2009 (red bars). Numbers of records are shown above each bar. (C) The location of geographical regions and the counties that comprise these regions, with shadings indicated by the key to regions on the map. White (no specified region) indicates that no breeding tricolored blackbirds were recorded during the entire study period.

Table 1) amassed data showing a 76% decline in colony size between the "1930s and 1970s" (which we took as 1935 to 1975 seeking equivalence). We did not find evidence for a decline in average colony size since the 1970s despite having good sample sizes and reasonable statistical power. This is contrary to Beedy et al. (1991), whose data (their Table 1) show a 62% decline between the 1970s and 1980s. Kyle and Kelsey (2011) also reported a 34% decline in breeding bird numbers in 2011 compared with 2008, despite the 2011 survey including 72% more sites than the 2008 survey (Kelsey 2008). However, it is hard to interpret such short-term trends because the survey data show high interannual variability ("Population variability" section in Appendix). Ultimately, more years of surveys with a similar sampling effort to the statewide breeding surveys are needed. Appropriately, Kyle and Kelsey (2011) recommended a triennial range-wide survey and an annual survey in three especially important counties (Merced, Kern, and Tulare), all of which are within the San Joaquin Valley.

Unlike average colony size, total (summed) population size across all breeding sites was (not surprisingly) strongly related to the total number of sites sampled. Consistent with this problem of sample size dependency, Beedy et al. (1991) reported an 89% decline in total breeding populations from the 1930s to the 1980s, whereas we found a 69% decline in this time period in total breeding populations. Because of the sensitivity of total population size to sampling effort we do not recommend using total population size as a metric of population status for this species.

Habitat loss is stated as the reason for decline in breeding populations (Beedy et al. 1991). However, the direct loss of breeding sites cannot explain why colony size declined within existing marshes (Table 2; Fig. 4), many of which are protected (e.g., National Wildlife Refuges) and are the same localities since the 1930s. Wetland loss has also slowed in recent years because of protection and mitigation resulting from the 1977 amendment of the Clean Water Act and other measures (e.g., Dahl 2006). Changes in habitat quality are generally harder to evaluate. Likely quality changes have occurred in foraging habitats through agricultural intensification leading to disturbance from harvesting and increased pesticide usage, which diminishes insect populations required for breeding (Beedy et al. 1991; Beedy and Hamilton 1997; Benton et al. 2002). Meese (2013) also found that over a 6-year period (2006–2011) over 40 colonies had chronically low

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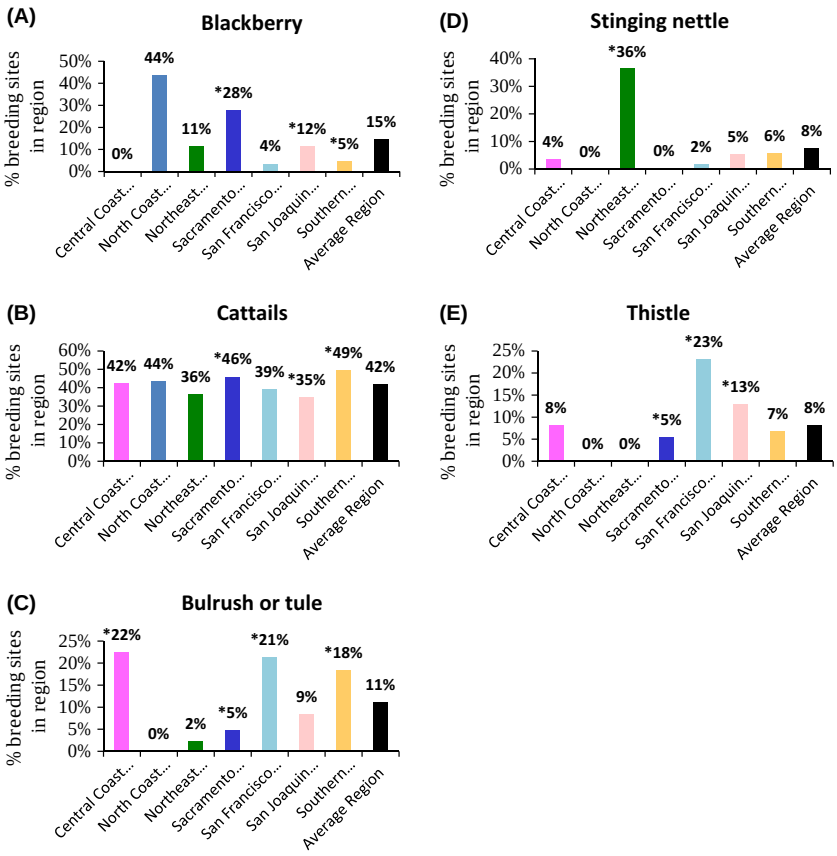

Figure 3. Percentage of breeding sites with the most common habitats within each region. An asterisk above a bar indicates that the habitat differed from the all-region average frequency for that habitat at $P < 0.05$ in a G-test. Overall G-tests checked for significance across regions (protecting alpha) and then G-tests for heterogeneity were performed among regions. No G-tests were conducted for the North Coast because there were only 16 breeding sites in total.

reproductive success, and reproductive success was correlated with insect abundance in foraging grounds; the determinants of insect abundance are largely unknown. There are also specific incidences of quality change that are clear, for instance the draining of marshes and senescence of marsh vegetation (Meese 2008). Historically, almost all wetlands in the Central Valley were managed for wintering migratory birds, with little attention to or capacity for managing spring wetlands when tricolored blackbirds would use these wetlands. In recent years some sites in National Wildlife Refuges (e.g., Kern, Merced) and some marshes owned by duck clubs have been managed specifically for tricolored blackbird breeding, however, these represent very few sites relative to the habitat requirements for this species.

Regional declines and habitat types

We found substantial changes in breeding populations in different regions and breeding habitat types (Figs. 1 and 4). These regional declines corresponded to trends in different breeding habitats, with four caveats. First, the total amount of variation in breeding bird abundances explained by habitat, region and time variables was only 14.5% to 20.8%, and some variation was shared by model terms (see h^2-values in Tables 1 and 2); hence while there is an effect it is not strong. Second, we cannot, based on correlational data alone, distinguish whether habitats drive regional differences or vice versa (or whether an unrelated factor drives both). Third, our statistical analyses could not fully include triticale since it is represented by only a small number of records, so the effect is quantified and discussed but cannot be directly compared with the results in Tables 1 and 2. Fourth, the data analyzed are for the presence of colonies: we do not have data from consistent monitoring or habitat areas regardless of occupancy by breeding tricolored blackbirds.

Prior to 1980 the Sacramento Valley held the largest number of birds, whereas from 1980 onwards the San Joaquin Valley supported the largest total breeding populations of tricolored blackbirds. We believe two factors are involved in the slow decline in average colony size in the San Joaquin Valley and growth of total breeding populations (Table 1, Figs. 1G and 2). First, colonies in triticale were all within the San Joaquin Valley (or Sacramento County), all during the last 20 years, and they were >40× larger than colonies in other habitats during this period. Second, cattail sites and blackberry

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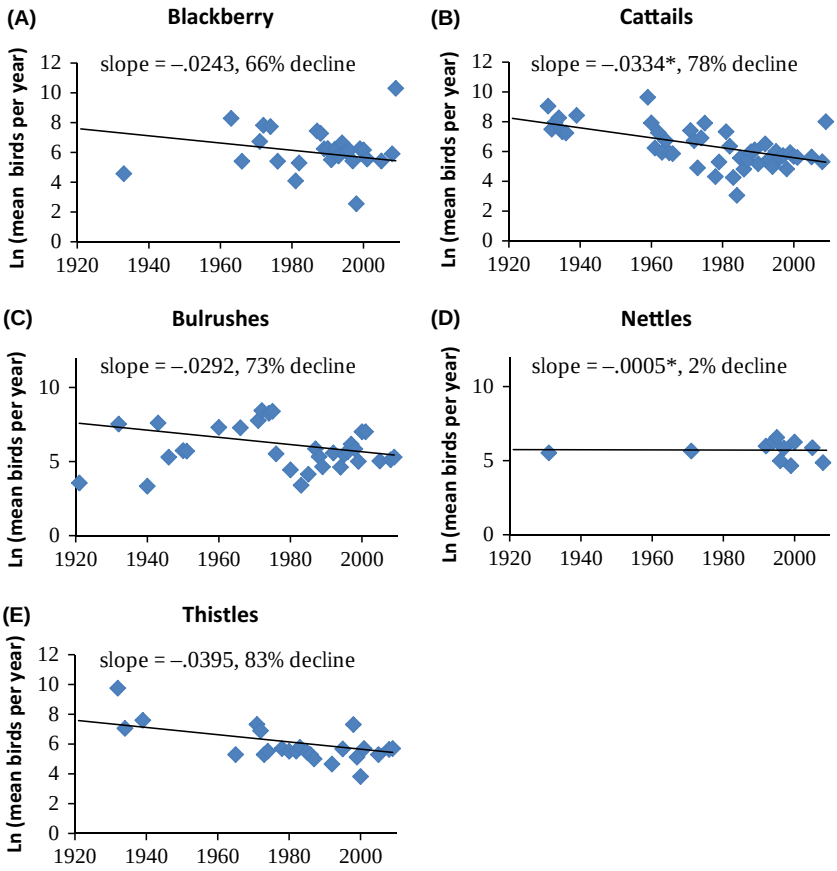

Figure 4. Trends in numbers of breeding birds in different common habitat types. Lines show linear regressions from the analysis detailed in Table 2. Regressions are identical for A, C, and E (Table 2). Each point shown is an annual mean; for instance there were three records that comprised the single point for nettles in 1971, and hence the outlying data points are less severe than they look in the figure.

sites were uncommon in the San Joaquin Valley. Central coast colony-size declines resulted from four early records (Fig. 1F), and three of these came from cattails in which declines were rapid (Table 2, Fig. 4B). The decline of Sacramento Valley breeding populations consisted of both a reduction in average colony size (Fig. 2A) and the total breeding population (Fig. 2B), and hence the number of sites occupied. Given that many of the marsh (cattail and bulrush/tule) sites in this region are in wildlife refuges it is surprising that such colonies declined in average size. However, increased management for wintering waterfowl may have altered the marshes from their historical conditions. Possibly the observed declines indicate that something other than breeding habitat per se affects breeding populations, and this might be something such as insects in foraging habitat (e.g., Meese 2013), or be associated with climate change.

Overall the observed trends in breeding populations in different habitats are consistent with regional changes we observed (albeit subject to the caveats listed above). Our observed changes in populations in different regions and habitats are consistent with Beedy et al. (1991) and Cook and Toft (2005). Himalayan blackberry sites showed slower declines in average colony size than other habitats, and cattail sites declined in average colony size more rapidly than other habitats. Similarly, the high proportion of cattail sites in the Sacramento Valley was coincident with more rapid declines in this area than the statewide average. Differences among habitats clearly contributed to a change in net geographic distribution, as well as altering overall temporal trends. In our cases we do not directly know what aspect of habitat alters the demography or movements of tricolored blackbirds, whether it is breeding habitat or foraging habitat for instance (Meese 2013). A few other studies have related bird population trends to habitat types. Virkkala (1991) tied regional population trends in Finnish birds to habitat types, and found that habitats that experienced the greatest loss or fragmentation showed the largest population declines. Seoane and Carrascal (2008) found that trends in Spanish birds varied among habitat types, and Wretenberg et al. (2007) showed that Swedish birds occupying agricultural habitats were most likely to show population declines.

The long-term changes in the proportions of birds in different habitats (Fig. 2) could result either from birds moving among habitats (within or across years), or from the long-term differences in fitness playing out. Itinerancy

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Table 2. Results of a general linear model testing for differences in ln (abundance) among the most frequently occurring habitats versus year of reporting for breeding records.

	SS	df	MS	*F*	*P*	h^2
Intercept	165.8	1	165.8	46.60	0.001	0.036
Habitat	42.7	4	10.7	3.00	0.018	0.009
Year	132.1	1	132.1	37.12	0.001	0.029
Habitat × Year	42.7	4	10.7	3.00	0.018	0.009
Error	4589.4	1290	3.6			

Parameter type	Habitat	Parameter	SE	*t*	*P*
Intercept	Blackberry	54.17	7.94	6.83	0.001
Difference in intercept	Cattails	18.19	8.84	2.06	0.040
Difference in intercept	Bulrush or tule	9.66	13.94	0.69	0.489
Difference in intercept	Stinging nettle	−47.50	17.43	−2.73	0.007
Difference in intercept	Thistle	30.20	16.44	1.84	0.066
Slope	Blackberry	−0.0243	0.0040	−6.09	0.001
Difference in slope	Cattails	−0.0091	0.0044	−2.06	0.040
Difference in slope	Bulrush or tule	−0.0049	0.0070	−0.70	0.486
Difference in slope	Stinging nettle	0.0238	0.0087	2.72	0.007
Difference in slope	Thistle	−0.0152	0.0082	−1.84	0.066

The whole model adjusted R^2-value was 14.5%. Effect size is given as the proportion of variance explained by explanatory variables, partial eta-squared $(h^2) = (SS_{effect})/(SS_{effect} + SS_{error})$. The first part of the table reports standard ANOVA table values and the second part reports parameter values. For Himalayan blackberry colonies the intercept and slope are shown, whereas differences from these values and significance of these differences are given for other habitat types.

likely contributes to change in the types of habitats used. Hamilton et al. (1995) reported that site occupancy was short-lived, 15% of sites being occupied for 2–3 years, and 26% being occupied for at least 4 years (the number of 1 year colonies was unclear). Meese (2011) also reported 84 new colony locations discovered from 2005 to 2011. These figures indicate some selection of new breeding colony locations on a yearly basis. Additionally, birds may breed at several different sites within a year (Beedy and Hamilton 1999) but the majority of database records represent the first spring breeding.

An important piece of biology is that we do not know whether tricolored blackbirds are philopatric to more permanent habitats, whether the same individuals regularly move among habitats, or whether there is more permanent emigration to different habitat types. In the closely related red-winged blackbird, source-sink dynamics were demonstrated with exchange of individuals between rural source (low predation) and urban sink (high-predation) habitats (Vierling 2000). For tricolored blackbirds it is unclear whether exchanges represent source-sink dynamics (Howe et al. 1991), ecological traps (Robertson and Hutto 2006), habitat selection, or buffer populations. In buffer populations, individuals in low-quality habitats represent individuals excluded by territoriality (density dependence) from high-quality habitats, but such individuals would move to higher quality habitats if populations in them declined, thereby buffering such populations from decline (Rodenhouse et al. 1997). While these details remain obscure, the ability of exchanges among habitats to modify range-wide and regional population trends is clearer.

Conservation recommendations

The variety of breeding habitats used by tricolored blackbirds and the ephemerality of breeding site occupancy in many habitats makes it difficult to disentangle the factors behind overall population trends. Himalayan blackberry and thistles also represent nonnative invasive species, so we are left with a conundrum of needing to protect areas of an invasive species to protect tricolored blackbird colonies (Cook and Toft 2005). Furthermore, over 50% of the breeding population in any given year was within relatively few triticale farm field colonies, requiring protection of these in at least the short term for conservation of this species. Itinerant breeding and the potential for movement of birds among habitats lead to several recommendations: (1) Monitor breeding, protect colonies, and analyze population trends in a full range of habitats; even sink habitats may contribute to reproductive output (Howe et al. 1991). (2) Institute and reinforce conservation measures that allow colonies to regularly occur in new areas and successfully complete breeding, including in annual crops such as triticale (discussed further below). (3) Work with private landowners where agricultural field colonies occur to create alternative, sustainable natural habitats outside of grain fields. (4) To conduct further studies of habitat quality and breeding success (e.g., Meese 2013; K. Weintraub, unpubl. data) to ascertain whether there are long-term trends in these characteristics and quantify long-term habitat-specific demography in relation to both breeding habitats and surrounding foraging habitats. The effects of landscape context of breeding colonies also need further study (Meese 2013), to determine the extent to which the habitat used for nesting versus the foraging habitat influences breeding success. (5) Given the ephemerality of some colonies, construct a stochastic metapopulation model and obtain empirical data

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on colony longevity and productivity to evaluate the long-term contribution to persistence and total population size in different habitats.

Only one of 13 colony locations in triticale was recorded as lasting for >1 year, compared with 28% of colonies in other habitats. However, we have observed that tricolored blackbirds may move to adjacent habitat areas when an originally occupied area was unavailable (e.g., due to crop rotation). We know that in the case of triticale there is more frequent reuse of sites when the habitat was replanted (from records after data were extracted in 2009), but replanting was infrequent. Because of the large size of colonies, triticale is an important habitat for tricolored blackbirds but is vulnerable to harvesting of the crop prior to young birds fledging (e.g., Kyle and Kelsey 2011). Although protected by the Migratory Bird Treaty Act (Federal Register 2006), the conservation of colonies in ephemeral habitats is entirely voluntary, and some colonies are conserved while others are lost each year (Meese 2008).

Conclusion

Despite recent increases in sampling of tricolored blackbirds through statewide breeding surveys, post-1990 trends are unclear, or based on very few years of data (Kyle and Kelsey 2011). The range-wide population decline has not occurred uniformly among habitats and regions: a relatively recent agricultural crop (triticale) has supported large breeding populations in the San Joaquin Valley and resulted in an increased proportion of birds being within this region compared to records prior to the 1980s. However, this habitat is ephemeral and carries with it a high risk of failure through harvesting. Understanding overall population trends requires understanding variation among habitats and regions.

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Conflict of Interest

None declared.

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Appendix

Methods

Additional data entry procedures

Historical observations from Beedy et al. (1991) were often estimates and rough descriptions of colony locations. To standardize data entry, we used the following pragmatic procedures. When only the name of the city was provided for a colony location, the coordinates for that colony were entered as the center of that city as given by Google Earth (Google 2011, Version 5.1.3533.1731, http://www.google.com/earth/index.html). When only a city/town name and direction (no distance) were provided, the coordinates for that colony were entered as 1 mile (1.6 km) in the specified direction from the city center. If the number of birds observed was given as "hundreds of individuals," the minimum bird count was entered as 200, the maximum bird count as 300, and the best estimate as 250. If the number of birds observed was given as "several hundred individuals," the minimum bird count was entered as 300, the maximum bird count as 400, and the best estimate as 350. If the number of birds observed was given as the number of pairs, the number of birds observed was entered as 2.5 times the number of pairs observed (Payne 1969). If the number of birds observed was given as the number of nests, the number of birds observed was entered as 1.5 times the number of nests observed, reflecting that this species is polygynous and colonies typically have twice the number of females as males (Payne 1969). All observations from Sloat (2005) were entered into the database with the observation date as 24 April of the specified year, as day and month were not provided.

Records of nonbreeding birds in the same location as a breeding colony during the breeding season were excluded from breeding records. Records of flying birds at uncertain locations were not entered. When possible, records from the 1994, 1997, 1999, 2001, and 2005 surveys were cross-checked against records from the California Natural Diversity Database (CNDDB; Bittman 2001). The CNDDB also contained observation data from before and after the survey dates, which were entered when sufficient information was available. The CNDDB provided more accurate location descriptions and coordinates than did the survey reports in some cases, which allowed for correction of uncertain locations from the survey reports Bittman 2001.

Results

Population variability

Variability of abundance (CV) among sites within each year and year number were positively correlated (1919–2009, excluding single-record years; $r_{50} = 0.37$, $P = 0.003$). The increase in the CV was also strongly correlated with sample size ($r_{50} = 0.69$, $P < 0.001$), indicating that the increased variability was more controlled by sampling effort than population dynamics.

Encouragingly, interannual variability in colony size for colonies with multiple years of recorded breeding (CV of abundance across years within sites) did not change with year of recording ($r_{241} = 0.0003$, $P = 0.997$). We interpret this as meaning that early and recent censuses are of similar reliability, and that conditions did not change sufficiently to alter variation in year-to-year abundance within breeding sites.

Use of different breeding habitat types

Across all years the dominant breeding habitat was cattails, which represented 48% of breeding records and 65% of breeding birds (Table A1). Next most important for breeding numbers was triticale with 9% of birds, but only 1% of records because of the large size of colonies in triticale. Bulrushes (or "tules") contained 7% of breeding birds and 9% of records. Himalayan blackberry accounted for 6% of breeding birds and 11% of records, and thistles for 5% of birds and 9% of records. Unknown breeding habitats (missing data in the original publication) and willows each accounted for 3% of records and 2% of breeding birds. Stinging nettles comprised 1% of birds but 5% of records. Other breeding habitat types were less frequently used (Table A1).

Representing contemporary patterns, from 1980 onward, 29% of breeding birds were recorded in cattails, 21% in triticale, 13% in Himalayan blackberry, 7% were in unknown habitat types, 5% in bulrush, 5% in prickly lettuce (*Lactuca serriola*), 4% in wheat, 4% in thistle, 3% in mustard, 3% in willows, 1% in stinging nettles, 1% in saltbush, and <1% in alfalfa, barley, giant reed, citrus groves, rice paddy, tamarisk, and wild rose.

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Table A1. Frequencies of records in different habitat types.

	Total		Breeding		Nonbreeding	
Habitat	Records (%)	Total birds (%)	Records (%)	Total birds (%)	Records (%)	Total birds (%)
Cattails (*Typha* spp.)	400 (34%)	2,848,874 (53%)	326 (48%)	1,843,704 (65%)	74 (14%)	1,005,170 (43%)
Unknown	209 (18%	238,137 (5%)	19 (3%)	74,968 (2%)	190 (35%)	163,169 (7%)
Blackberry[1]	157 (13%)	648,137 (12%)	72 (11%)	175,518 (6%)	85 (16%)	472,619 (20%)
Bulrush or tule (*Schoenoplectus* spp.)	95 (8%)	380,706 (7%)	63 (9%)	202,550 (7%)	32 (6%)	178,156 (8%)
Thistles[2]	83 (7%)	227,486 (4%)	59 (9%)	142,850 (5%)	24 (4%)	84,636 (4%)
Stinging nettle (*Urtica dioica*)	47 (4%)	65,263 (1%)	32 (5%)	19,000 (1%)	15 (3%)	46,263 (2%)
Grassland[3]	36 (3%)	8085 (0.2%)	0 (0%)	0 (0%)	36 (7%)	8085 (0.3%)
Grain fields						
Triticale	14 (1%)	437,300 (8%)	8 (1%)	261,650 (9%)	6 (1%)	175,650 (7%)
Rice paddy	13 (1%)	8027 (0.2%)	5 (1%)	3150 (0.1%)	8 (2%)	4877 (0.2%)
Barley	5 (0.4%)	15,540 (0.3%)	1 0.1%)	4000 (0.1%)	4 (1%)	11,540 (1%)
Wheat	6 (0.4%)	78,775 (2%)	6 (1%)	45,500 (2%)	0 (0%)	33,275 (1%)
Other grain fields[4]	4 (0.3%)	6625 (0.1%)	1 (0.1%)	6000 (0.2%)	3 (1%)	625 (0.03%)
Agricultural fields						
Pasture	22 (2%)	37,801 (1%)	0 (0%)	0 (0%)	22 (4%)	37,801 (2%)
Mustard (*Brassica* spp.)	18 (2%)	106,667 (2%)	6 (1%)	65,250 (2%)	12 (2%)	41,417 (2%)
Feedlot	6 (1%)	3713 (0.1%)	0 (0%)	0 (0%)	6 (1%)	3713 (0.2%)
Alfalfa	5 (0.4%)	5300 (0.1%)	1 (0.1%)	1000 (0.03%)	4 (1%)	4300 (0.2%)
Other ag. fields[5]	3 (0.2%)	65,600 (1%)	1 (0.1%)	65,000 (2%)	2 (0.4%)	600 (0.03%)
Trees/Orchards						
Willows (*Salix* spp.)	26 (2%)	70,984 (1%)	23 (3%)	51,079 (2%)	3 (1%)	19,905 (1%)
Riparian trees	4 (0.3%)	8050 (0.2%)	0 (0%)	0 (0%)	4 (1%)	8050 (0.3%)
Tamarisk	2 (0.2%)	2787 (0.1%)	2 (0.3%)	2787 (0.1%)	0 (0%)	0 (0%)
Other trees/orchards[6]	10 (1%)	12,948 (0.2%)	2 (0.3%)	2200 (0.1%)	8 (2%)	10,748 (1%)
Shrubs and herbs						
Giant reed (*Arundo donax*)	5 (0.4%)	5651 (0.1%)	2 (0.3%)	3900 (0.1%)	3 (1%)	1751 (0.1%)
Atriplex or salt bush	7 (1%)	6536 (0.1%)	7 (1%)	4536 (0.2%)	0 (0%)	2000 (0.1%)
Others shrubs/herbs[7]	1 (1%)	47,565 (1%)	0 (0%)	0 (0%)	1 (0.2%)	47,565 (2%)
Other habitats						
Marsh	1 (0.1%)	1050 (0.02%)	0 (0%)	0 (0%)	1 (0.2%)	1050 (0.04%)
Wildflower field	1 (0.1%)	450 (0.01%)	0 (0%)	0 (0%)	1 (0.2%)	450 (0.02%)

[1]Himalayan (*Rubus armeniacus*) 155 records of total (not breeding/nonbreeding), brambles 1 record, California blackberry (*Rubus ursinus*) 1 record.
[2]Milk thistle (*Silybum marianum*) 48, bull thistle (*Cirsium vulgare*) 35.
[3]Grassland 26, grazed grassland 4, mowed field 2, tall grass 2, wet grassland 1, Sudan grass 1.
[4]Wheat silage 2, grain field 1, silage 1.
[5]Lettuce (*Lactuca* spp.) 1, plowed field 1, tomato field 1.
[6]Button willow 1, buttonbush 1, desert olive 1, eucalyptus 1, silver poplar 1, fruit tree 1, lemon orchard 1, orange grove 1, almond orchard 1.
[7]Wild rose 2, Baccharis 1, mallow (*Malva sylvestris*) 1, wild raspberry 1, mulefat (*Baccharis viminea*) 1.

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The 2004 Tricolored Blackbird April Survey

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A survey of Tricolored Blackbirds (*Agelaius tricolor*) was conducted in the Central Valley of California from 16-19 April 2004. The goals of the survey were to visit all historical Central Valley breeding colonies where 2,000 or more birds had been previously documented, estimate the sizes of any colonies encountered, and document habitat status of historical sites.

Surveys for Tricolored Blackbirds date back to the 1930s, when Neff (1937) estimated over 700,000 in just 8 counties (see Beedy and Hamilton 1999 for a complete survey history). Recently, statewide April surveys were conducted in 1994, 1997, 1999, and 2000 (Beedy and Hamilton 1997, Hamilton et al. 1999, Hamilton 2000). Sponsored by the California Department of Fish and Game (DFG), U.S. Fish and Wildlife Service (FWS), and California Audubon, these surveys had the explicit goal of counting all Tricolored Blackbirds in California, with follow-up nest counts to better estimate colony densities, productivity, or both on many of the largest colonies. A DFG and FWS goal of conducting a statewide survey every three years had proven to be difficult to achieve due primarily to lack of funding and personnel shifts within the agencies. In the face of further reductions in agency funding in 2004, it was determined that a statewide census was not feasible and we decided to concentrate our effort on attempting to determine the status of Central Valley sites that historically held 2,000 or more birds.

Interest in conducting a 2004 Tricolored Blackbird survey originated with members of the Tricolored Blackbird Working Group. The informal working group includes representatives from resource management agencies, non-governmental organizations (NGOs), and non-agency Tricolor Blackbird experts whose overarching motivation is to stop the population decline of the species. While the working group addresses Tricolor Blackbird conservation on many fronts, one of its primary focuses is to re-establish a regular, systematic survey that would yield better estimates of population trend, conditions of historic nesting sites, patterns of habitat use, and productivity data.

Methods

Volunteers

As with previous recent surveys, this effort relied almost entirely on volunteers to collect the data. A note seeking volunteers with prior experience surveying and identifying Tricolored Blackbirds went out via the CVBC internet listserv (i.e., CVBirds) on 25 March. Individuals that had participated in previous surveys were contacted directly by LE. Individuals

who responded to the request were assigned a specific geographic region of the Central Valley by LE based on stated surveyor preference and an attempt to ensure that the locations of previously reported colonies were covered. Survey participants were sent maps depicting the locations of historical colonies. An attempt was made to contact all volunteers by phone to ensure that they understood their assignment.

Volunteers were also sent survey instructions and an electronic form for recording the data. The instructions outlined the goals of the survey, dates of observation, and observer protocols. Observers were instructed to visit historical colony locations, respect private property by not trespassing, fill out the data sheet provided, and be watchful for new colony locations. The form includes 36 data fields that follow closely the format from previous years. It is available from the authors upon request. In the instructions, observers were asked to estimate colony sizes, and round estimates to 10s for small colonies (i.e., about 100 adults), to 100s for medium-sized colonies (i.e., about 1,000 adults), to 1,000s for large colonies (i.e., 10,000 or more adults), and 5,000 or even 10,000 for colonies over 25,000 adults.

Maps

Maps were created from spatial data of historical colony sites that were documented in previous censuses and from incidental sightings of Tricolored Blackbird colonies dating back to 1980; the majority of the 1079 recorded colonies are from 1994 to 2000. Most of these data are housed in spatial form in the DFG Biogeographical Observation and Information System (BIOS). These data were augmented with records from the California Natural Diversity Database (NDDB). The records were used by EDAW, Inc. to create maps of historical colonies with $\geq$ 2,000 birds, were produced as Adobe Acrobat (pdf) files and distributed to volunteers.

Reporting

Nearly all data were entered on the electronic form and emailed back to LE. A few observers filled out their forms by hand or sent maps of new colony locations either by U.S. post, email or fax. All data were then transmitted to MG by the same methods. Data submitted on the electronic form were easily converted to text files and imported into Microsoft Excel. Data submitted in other formats were entered by hand. Final data will be stored in the DFG BIOS and NDDB systems.

Analyses

Colony estimates were summed by MG. Multiple counts of the same colony by different observers yielded low and high estimates for those colonies. Many of these sites were revisited by one or two experienced surveyors who collected additional data that led to refined colony size estimates. As these data were collected outside of the survey period, they

will be reported elsewhere (Hamilton 2004). The four-day survey period followed a survey tradition for this species and was designed to minimize double-counting individuals that might be traveling between colony sites, or that attempted nesting at multiple locations during the season.

Results

Volunteers and Coverage

Twenty-nine volunteers searched for Tricolored Blackbirds during the four-day count period; two additional volunteers contributed data from five small colonies on 12 May, 22 days later, in Kern Co. (see Acknowledgements). Nearly all observers submitted their data within a week of the count.

There were 201 colony sites in the Central Valley that numbered 2,000 or more birds at some point in the past (Table 1). During the survey, 182 of those 201 (90%) were visited. An additional 15 sites historically numbering ≥2,000 birds exist in four counties outside of the Central Valley (Siskiyou, Santa Clara, Monterey, and Riverside); two of those 15 were visited (in Monterey Co.). Of the 216 sites that historically numbered ≥2,000 birds, 81 were in northern counties (Solano and Sacramento counties northward), and 135 were in southern counties. In northern counties 78 of 81 (96%) were visited during the survey period. In southern counties 106 of 135 (79%) sites were visited. In sum, 184 (85%) of the 216 historical colony sites were surveyed. An additional 17 historical colony sites with <2,000 birds and 11 known colony sites not documented as part of past survey efforts were surveyed during the survey period. In total, 244 sites were visited during the survey period. Seven sites were visited before or after the four-day period, and approximately 25 sites were visited two or more times by experienced surveyors during the survey period.

Active Colonies

Twenty-eight of the 184 visited sites supported active colonies (Table 1). An additional five colonies (in Kern County) were found outside the survey period; these were presumed, based on nesting stage, to have been active during the survey period and were added to the total, summing to 33 active colonies. Thirty-one of these were in counties located in the southern portion of the state. Single colonies were documented in Yolo and Solano counties. Six were outside the Central Valley in Monterey or San Diego counties.

Colony size estimates ranged from 5 to 102,000 adults (Table 2). At six colonies, multiple counts by various methods resulted in low and high estimates. Colonies surveyed outside the count period but assumed to be in existence at the time of the count period totaled 380 birds. Thirteen (39%) of the 33 colonies held ≥2,000 birds each. Six to seven colonies held ≥10,000 birds each.

Fifteen colonies were considered protected because they were on lands

Table 1. Survey effort for 2004 Tricolored Blackbird survey.

Counties	Historical colonies ≥2,000 birds in NDDB	Historical colonies ≥2,000 birds surveyed	Historical colonies surveyed regardless of size	Total colonies surveyed[1]	Active colonies
Northern Counties					
Butte	4	4	4	4	0
Colusa	16	16	28	28	0
Glenn	3	3	3	3	0
Placer	4	4	4	4	0
Sacramento[2]	46	46	46	46	0
Shasta	2	0	0	0	0
Siskiyou[3]	1	0	0	0	0
Solano	0	0	0	1	1
Sutter	1	1	3	3	0
Tehama	1	1	1	1	0
Yolo	2	2	5	6	1
Yuba	1	1	3	3	0
N.Co. totals	81	78	97	99	2
Southern Counties					
Alameda	0	0	1	1	0
Calaveras	2	2	4	4	0
Contra Costa	1	1	1	1	1
Fresno	10	8	11	13	1
Kern	34	31	41	44	9
Kings	8	7	7	8	1
Madera	0	0	0	0	0
Merced	40	40	45	47	5
Monterey[3]	4	2	7	7	4
Riverside[3]	9	0	0	0	0
San Diego[3]	0	0	3	3	2
San Joaquin	6	4	4	4	0
Santa Clara[3]	1	0	0	0	0
Stanislaus	5	3	3	4	1
Tulare	15	8	9	9	2
S.Co. totals	135	106	136	145	26
CV totals	201	182	223	234	22
Survey totals	216	184	233	244	28
Visited outside Survey Period		0	1	7	5
Totals	**216**	**184**	**234**	**251**	**33**

1 – Includes historical sites, sites discovered this survey and sites used previously but not in the CDFG Natural Diversity Database.

2 – Number of sites visited in Sacramento County is an estimate, however coverage was assumed complete.

3 – County outside Central Valley.

Table 2. Colony size estimates (# of adults) for the 2004 Tricolored Blackbird survey.

County	Low Estimate	High Estimate	Primary Habitat
Calaveras/Stanislaus[1]	4,500	24,500	Himalayan blackberry
Contra Costa	3,000	3,000	cattail
Fresno[2]	11,000	102,000	silage
Kern	1,500	1,500	nettle
Kern	400	400	nettle
Kern	5	5	nettle
Kern	6,700	7,500	nettle
Kern	400	400	nettle
Kern	10	10	nettle
Kern	50	50	nettle
Kern	2,000	2,000	nettle
Kern	2,000	2,000	cattail
Kings	10,000	10,000	tamarisk
Merced	3,000	3,000	Himalayan blackberry
Merced[3]	6,500	25,000	Himalayan blackberry
Merced	25,000	25,000	cattail
Merced	12,000	12,000	cattail
Merced[4]	25,000	30,000	cattail
Monterey	200	200	bulrush
Monterey	300	300	desert olive
Monterey	600	600	bulrush
Monterey	20	20	desert olive
San Diego	250	250	Himalayan blackberry
San Diego	150	150	bulrush
Solano	300	1,000	bulrush
Tulare[5]	100	1,200	cattail
Tulare[6]	20,000	60,000	silage
Yolo	400	400	cattail?
Pre- and Post-Count Colonies			
Kern – 5/12/2004	40	40	thistle
Kern – 5/12/2004	30	30	thistle
Kern – 5/12/2004	80	80	thistle
Kern – 5/12/2004	130	130	thistle
Kern – 4/8/2004	100	100	nettle

1 – 3 independent observers of 3 colony sites spanning 2 mi. straddling county border.
2 – Variously considered from 1 to 3 colonies on a dairy, 3 independent observers.
3 – A single colony at O'Neill Forebay Wildlife Area, 3 independent observers.
4 – Single colony, 2 independent observers.
5 – Single colony, 2 independent observers.
6 – Single colony on a dairy, 3 independent observers.

owned either by the FWS, the State of California, a private conservation land trust, or on Toledo Pit (a storage basin owned by Lower Tule Irrigation District, see Schlafmann and Hardt 2004). The two largest colonies were in silage (which usually is a wheat [*Triticum* spp.] or barley [*Hordeum* spp.] crop often intermixed with non-native weedy plants). Marsh habitats dominated by cattail (*Typha* spp.) and bulrush (*Scirpus* spp.), supported the most colonies, 11. A total of four colonies were in Himalayan blackberry (*Rubus discolor*) thickets. The remaining 16 colonies were in habitats dominated by thistle (*Cirsium* and *Centaurea* spp.), desert olive (*Forestiera neomexicana*), nettle (*Urtica* spp.), or tamarisk (*Tamarisk* sp.).

No observers reported permanent habitat conversion of historical sites to development, but some reported modified habitat (e.g., mown blackberry thickets or dry marshes that previously supported active colonies).

Discussion

Volunteers and Coverage

Volunteers collected data for 90% of the colonies known to support ≥ 2,000 birds during the survey period. It is likely that some additional sites were checked but not documented by surveyors or were known to be unsuitable, and were therefore, not visited. The instructions did not state explicitly that surveyors should fill out survey forms for sites where no birds were found. We still encourage that information on historical colony sites that have been permanently altered be sent to the authors.

Participants were not given much lead time, only about six weeks between the announcement and the survey. The level of coverage and number of participants recruited on short notice is likely an indication of the interest birders have in Tricolored Blackbird conservation and a reflection of how effective e-mail and internet listserves can be as tools in coordinating large volunteer survey efforts for monitoring declining bird species.

Active Colonies

In general, Tricolored Blackbirds breed first in the southern San Joaquin Valley then again in the northern Central Valley after failure or success of their first attempt; thus, they are "itinerant" breeders (Hamilton 1998). The dearth of active colonies in northern counties found during this and other April surveys provides evidence of this phenomenon. Data collection by Bill Hamilton, by agency personnel on wildlife refuges continued across the State in 2004, after the survey, to further document additional and later colony locations, successes and failures of particular colonies, and habitat use patterns. A better picture of the 2004 breeding season will only emerge upon analyses of these more complete data sets.

A reasonably accurate statewide population estimate for this itinerant-breeding species (see Hamilton 1998, 2004) requires, at a minimum, that all major and most minor colonies are found and censused with reasonable

accuracy. However, locating, and especially counting Tricolored Blackbird colonies are challenging propositions. Larger colonies in often-used locations are relatively easy to locate, however, small colonies tucked away in foothill canyons, or obscure wetlands on private property, can be difficult to find or to access. Many birders who have attempted to track flocks of Tricolored Blackbirds streaming across the sky between nesting and foraging areas have experienced the disappointment of the quest ending at a locked gate or no trespassing sign. Once found, a colony's size is traditionally estimated in one of two ways, by direct observation, or by delimiting the nesting area, multiplying by a nest density estimate, and correcting for an assumed rate of polygyny (Lack and Emlen 1939, Payne 1969, Hamilton 1998). Inevitably, direct observation of colonies results in large discrepancies (e.g., tens of thousands) between independent estimates, due in part to observer experience, but also to rapid changes in the activity levels of colonies from colony initiation, through nest building, incubation, feeding, to fledging (Hamilton et al. 1995); activity at nesting colonies can even vary significantly within a matter of hours. Settling colonies are often overestimated because of swarming males that fail to secure a territory and later leave. Thus, in past large-scale surveys as well as in this one, a few experienced individuals revisited larger colonies to reassess colony estimates, make nest density transects, or otherwise check initial estimates through multiple visits. Monitoring methods continue to evolve (Yee and Miller 2004) but locating and counting flocks of Tricolored Blackbirds will undoubtedly continue to present challenges for birders and researchers for the foreseeable future. Pre-count training, as was conducted before the 2000 survey, will help minimize future discrepancies (Hamilton 2000).

Comparison with Other Surveys

This survey departed in significant ways from April surveys in 1994, 1997, 1999, and 2000. The aims of those surveys were to locate all Tricolored Blackbird colonies, estimate their numbers, and determine nesting outcomes where possible. With the possible exception of 1999, the results of these surveys are considered to have had roughly equal effort; they used the same methods, are thought to have found all the large colonies, and thus to have counted the majority of birds (Hamilton 2000). They are the best existing population estimates, and point to an alarming population decline over the past decade (Hamilton 2000). In contrast, this survey was designed only to revisit Central Valley colony sites that numbered 2,000 or more birds in the past, count colonies found, document the location and size of new colonies, and document the condition of sites used historically.

Despite considerably fewer observers in 2004 than in the four previous survey years, about 25% more total sites were surveyed. The express purpose of this survey, however, was to visit historical Central Valley sites, so this difference is perhaps not surprising as survey effort was concen-

trated in a smaller area than in previous years. The number of active colonies was low compared to previous years (33 in 2004 versus 72 in 2000, for example), but many sites in southern California were not visited, and many small, historical colonies were not visited, thus perhaps accounting for some of the discrepancies. Small colonies make up the bulk of all colonies every year. In 2000, for example, 50 of the 72 active colonies found during the survey had fewer than 2,000 birds each (Hamilton 2000). Comparing the number of counties surveyed in 2004 is not direct either, as the aims of the participants during the survey, and thus the way counties were surveyed differed between 2004 and previous years; in addition, the focus of this survey was the Central Valley. Nonetheless, we obtained at least some coverage across a wide swath of the State in 2004.

We reiterate, that the results of this survey were not intended to be used to estimate the statewide or even valley-wide Tricolored Blackbird population. A more accurate estimate would require more surveyors covering more potential Tricolored Blackbird nesting habitat over more of the breeding season, or using new methods combining intensive area sampling and double-observer methods (Yee and Miller 2004). Although the results cannot support conclusions related to trend of the overall population, they do provide valuable information on the current status of many of the known colony sites in the southern part of the Central Valley.

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Financial constraints often limit the ability of federal and state resources agencies to provide adequate funding for surveys and other actions related to the conservation of the species. The authors are optimistic that the outstanding response by volunteers asked to participate in this survey is indicative of the overall level of concern and desire to provide adequate protection for this species by the birding community. We thank Kevin Hunting, Bill Hamilton, and Ted Beedy for reviewing an earlier draft of this article. Financial support for this survey was provided by EDAW, Inc. and FWS.

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Management implications of the 2004 Central Valley Tricolored Blackbird Survey

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Introduction

In this article I compare the reproductive success of Tricolored Blackbirds (*Agelaius tricolor*) in alternative nesting habitats in 2004 and consider the application of these findings to further management actions that will favor this species. I use data from the 2004 survey (hereafter, Survey) of Tricolored Blackbird (hereafter, Tricolor) colonies in the Central Valley (Green and Edson 2004) and my own observations of all Tricolor colonies I could locate or knew about during the remainder of the 2004 breeding season. I followed the fate of some of the colonies reported by Survey participants during and after the nesting season. Without these observers, who covered a broad geographic area, this expanded analysis would have been impossible. Observations by Central Valley Bird Club (CVBC) members and others play an important role not only in the management of tricolors but also in the protection of environmental sites of ephemeral or enduring beauty and grandeur, treasured places where Tricolor colonies choose to regularly settle.

The 2004 Survey focused on agricultural destruction of nests in large colonies in silage fields. Colonies in silage fields, mainly near dairies in the San Joaquin Valley, usually are lost to harvesting operations (Hamilton et al. 1995). Since harvesting of silage fields occurs in April, the Survey provided an opportunity to estimate the impact of silage colony losses upon the overall Tricolor nesting effort.

Methods

Identification of colonies and their size

As noted by Green and Edson (2004) the collective search for colonies during the Survey was neither comprehensive nor random. Surveyors were directed to look at sites where large colonies were seen in the past. It is thus likely that this account, relying heavily on the Survey, under-represents small colonies compared with other survey years. Observers also located additional previously utilized colony sites that were unoccupied by Tricolors at the time of the Survey.

My observations included season-long observation of colonies at the Wind Wolves Conservancy in the California Coast Range foothills, Kern County. Prior experience shows that Tricolor nesting in the Central Valley

moves northward in May and June (Hamilton 1998). My search for colonies after the Survey was also nonrandom. I located all colonies reported to me but searched selectively in the Sacramento Valley in portions of Yolo, Colusa, Glenn, Sutter and Butte counties, including some western Coast Range foothill sites in Glenn and Colusa counties. There was no report of breeding colonies in Sacramento County, a former stronghold of the species (Neff 1937, Beedy et al. 1991, Beedy and Hamilton 1997), but in 2004 some Tricolors probably nested there in Himalayan blackberry (*Rubus discolor*) copses.

Methods for estimating the numbers of birds attending colonies are summarized by Green and Edson (2004). All data from the Survey and from subsequent reports forwarded to Michael Green are included. Some of these counts are modified here based upon (1) personal counts of the number of nests in a colony after the breeding season, (2) discussion with the observers who made observations during the Survey, (3) more exact measurements of the areas occupied by colonies at some later date and (4) inclusion of the largest number of birds present at any time during the season, estimates at the time of the survey notwithstanding. When there were differences between the Survey reports by more than one observer for a colony I contacted the observers and made an effort to determine the basis for the differences. At the silage colonies at Producers Dairy, Fresno County, and the Te Velde Ranch, Tulare County, transects through colonies at the end of the season provided estimates of the number of nests and thus the maximum number of nesting females present. Many females re-nest at some sites and post-season nest counts cannot estimate the actual number of females attending a colony.

Since each female Tricolor will on the average build more than two nests per breeding season the numbers in tables may suggest an exaggerated abundance of Tricolors. Observations reported here do not account for as many as the 162,000 Tricolors located during the 2000 survey. It is not the intent of this paper to evaluate the status of Tricolors. A more thorough survey proposed by the United States Fish and Wildlife Service (hereafter, USFWS) for 2005 should determine the trend in overall abundance.

Measurements of reproductive success

Since I determine reproductive success by examining active nests, the production of nestlings by a colony does not depend upon counting the number of birds attending it. An analysis of the productivity of colonies in different habitats depends upon estimating the probability that nests in those habitats will fledge nestlings. To determine the number of chicks fledging in successful nests (RSS = Reproductive Success of Successful nests), i.e., reaching eight days of age, nests with chicks 6-8 days old are counted and the number of nestlings per nest is averaged. The number of nestlings in successful nests (RSS) is multiplied by number of successful nests, and then divided by the total number of nests. This gives the estimate

of mean reproductive success (RS) of all nests. The estimate of the number of fledglings produced by a colony is the mean RS times the number of nests at that colony. Neither maximum RS nor RSS can be determined after nestlings in some marked nests have fledged.

Where possible, RS values for 2004 colonies were determined by direct measurement (see below). When there was no measurement for RS for a colony I applied average RS values previously determined during a 12-year interval for specific kinds of habitat. The Himalayan blackberry RS estimates in Center for Biological Diversity (2004) are used for this substrate except for those colonies where I measured RS. None of my measurements in 2004 were as great as 2.0 and it is possible that the value quoted in Center for Biological Diversity (2004) suffers from local pseudo-replication. The cattail RS value of 0.5 is based upon 20 colonies measured by me between 1997 and 2003. The Tamarisk value of 1.8 is based upon a single measurement in 1997 at the same site where the 2004 colony was observed.

Direct measurements of reproductive success

No colony was entered when male song chorus was in progress, up to two weeks. Since incubation lasts 11 days (Beedy and Hamilton 1999) an observer can expect to find nests with eggs or small chicks about two weeks after the main male chorus ends. At this brief entry into the colony the approximate schedule for potential jumping and fledging can be determined. The colony needs to be revisited only once more, to measure RS just before the first jumpers are expected. If there are older nestlings in that part of the colony examined they may jump from their nests in response to an observer. If a jumper was encountered, measurements of RS were ended for the season at that colony.

At the time of the final entry into the colony there are some empty nests in most colonies. If there are no jumpers I assume that empty nests and nests with cold eggs were lost to predation, weather, infertility, abandonment or death of females. The measurement so determined is maximum success because there are nests with several days of remaining exposure to predation in the colony, including the 8-day-olds who will not voluntarily fledge for several more days. Depending upon the synchronicity of a colony there may be nests with eggs beside others near fledging. It is for this reason that the accurate determination of RS depends upon marked nests whose fate is determined.

Foraging habitat

Foraging habitat was determined by observation or by discussions with others reporting colonies. The setting of colonies often determines the characteristics of foraging habitat. Some colonies established in cattail (*Typha latifolia*) ponds surrounded by dry rangeland may commute to irrigated agriculture and ignore the surrounding livestock range, a relationship not observed in 2004. Observers need to follow foragers to be sure they

Table 1. Nesting success of Tricolored Blackbirds in 2004 using different nest substrates, based upon direct measurement. These values are included in Tables 2 and 3, along with data for other colonies where the numbers of fledglings were estimated using habitat-specific estimates of RS (= mean reproductive success of all nests; see text for details).

NESTING HABITAT	LOCATION, COUNTY	BIRDS	RS	FLEDGLINGS
Cattail	Delevan NWR, Colusa Co.	136,000	1.07	97,733
	Toledo Pit, Tulare Co.	100	0.00	0
	Saucido Rocks, Santa Barbara Co.	20	0.00	0
	Merced NWR, Merced Co.	25,000	0.00	0
	Subtotals	**161,120**		**97,733**
Himalayan blackberry	Butte hunting club, Butte Co.	25,000	1.50	25,000
	Meridian (partial), Sutter Co.	4,000	0.00	0
	O'Neill Forebay, Merced Co.	7,500	0.04	200
	Bryant, Sutter Co.	1,000	0.00	0
	Subtotals	**37,500**		**25,200**
Nettle	Wind Wolves, Kern Co.	9,915	2.00	13,220
	Subtotals	**9,915**		**13,220**
Silage	Road 88, Kern Co.	5,000	0.00	0
	TeVelde, Tulare Co.	36,000	0.30	7,200
	Producers Dairy, 3rd settlement, Fresno Co.	14,000	0.00	0
	Subtotals	**55,000**		**7,200**
Sandbar willow	Meridian (partial), Sutter Co.	17,000	1.00	11,333
	Subtotals	**17,000**		**11,333**
California blackberry	Meridian (partial), Sutter Co.	4,000	0.00	0
	Subtotal	**4,000**		**0**
Tree willow	Meridian (partial), Sutter Co.	30	0.07	2
	Subtotal	**30**		**2**
Totals		**284,565**		**154,688**
Percent of all observations in Tables 2 and 3		**71%**		**69%**

have identified foraging habitat. This is a more difficult task than one might imagine. While there are often concentrations of birds foraging near colonies, provisioning adults may range up to six km (Hamilton 2003) from their breeding colonies.

Results

Data for analysis of productivity were based upon observations of nesting outcomes at known colonies (Table 1) and observations of colonies at other sites. Changes in the estimates made during the Survey to adjust for actual estimates of numbers of nests do not necessarily imply that errors were made in estimates of colony sizes. During the pre-breeding interval Tricolors may assemble at large dispersal centers in huge foraging flocks (on the order of tens of thousands of birds). This may account for the difference between what Scott Frazier (pers. comm.) found on the levees west of Corcoran Road in Kings County at the time of the Survey and the small number of nests found there after the breeding season. His post-season estimate of 400 nests (600 birds) contrasts with his April observation of about 10,000 birds. I use the nest count data here because I am evaluating reproductive success and estimated colony fledgling production, not the number of birds attending colonies.

Data applying direct measurements of RS for 2004 colonies (Table 1) were supplemented with average RS data. Table 2 includes all data from Table 1 plus means for RS from other years applied to all other 2004 data. Sixty-seven percent of all birds and 70% of all fledgling production values identified in Table 2 are based upon measurements made in 2004 (Table 1).

The number of fledglings in the totals in Tables 2 and 3 were not observed to actually fledge and are estimates of relative fledging success. They are estimates of the relative productivity of colonies observed in 2004. When fledging success is measured, it is measured prematurely to avoid excessive disturbance to older nestlings. Therefore, especially in colonies being preyed upon by coyotes, additional losses to predation undoubtedly were sustained before fledging was completed. At the TeVelde colony starvation strongly reduced fledgling cohorts. Most (72%) nests there during the final colony search contained only a single nestling and the only 8-day-old nestling found was dead.

In Table 3, data from Table 2 are summarized by land use, nesting substrates, foraging habitat types and other criteria. At many of the colonies foraging occurs on more than one category of foraging habitat. The allocation of colonies in Table 3 is to the most heavily utilized habitat in each case. The categorization of foraging habitats identifies Central Valley agricultural lands as pulsed wetlands, watered intermittently according to crop needs. Tricolors foraging from colonies often follow flooding in agricultural and natural settings.

Foraging habitat of the large colony at Delevan National Wildlife

Refuge (hereafter, NWR), Colusa County, could not be precisely determined during several visits to the colony. We (USFWS biologists and the author) saw large numbers of Tricolors from this colony foraging on the refuge in dry shallow seasonal pools, in dry grassy vegetation and off refuge in rice fields. In Table 3 this entire colony is allocated to rice foraging because rice fields surround the refuge in a pattern similar to that at other rice dependent colonies.

The huge reproductive output of the cattail colony at Delevan NWR (Table 1) biased the overall results towards cattail marsh success. This has not been the usual result in previous years, when predation losses reduced RS to a relatively low average value.

One striking feature of results summarized in Table 3 is that mean colony size of the 21 dry-land colonies was less than 2,000 (1,974). Colonies using wetland foraging habitats were on average much larger: four at dairies held 22,125 birds; eight near rice held 24,429 birds; and six in Central Valley agricultural areas held 12,233 birds. Nevertheless, we found more dry-land colonies and their measured and estimated productivity per breeding bird was greater than that of Tricolors using other foraging habitats.

Discussion

All of the relationships between foraging habitat and productivity and other differences between geographic regions are biased by the large number of failed or relatively unsuccessful birds in silage and the huge colony at Delevan NWR. These effects emphasize the importance of finding and measuring the productivity of the large colonies. It is possible that large colonies were not found in 2004 or were found and not reported. The analysis here is intended to summarize what was found and reported in 2004 and to suggest a pattern of analysis that can be applied to a more complete survey in the future, hopefully 2005.

Weather in the spring of 2004 in the San Joaquin Valley and in southern California was exceptionally dry (D. Clendennen, pers. comm.), impacting Tricolor settlement because access to nearby open water is an essential Tricolor habitat requirement. The dryness of the season limited the abundance and vigor of thistle (*Cirsium* spp.) and mustard (*Brassica* spp.) patches throughout California. The weak development of these habitats in 2004 may have concentrated birds at irrigated agricultural sites in the Central Valley. For example, the decline in the number of Tricolors at the Wind Wolves study area is entirely accounted for by the absence of spring water to fill a cattail pond (Sag Pond). In 2001, 4,000 Tricolors nested at this pond but it lacked water and Tricolors in 2004.

Cattails

In 2004, no Tricolors nested in the complex of duck clubs located adjacent to rice fields near Williams, Colusa County. A large Tricolor colony

Table 2. Estimated distribution of a sample of nesting Tricolored Blackbirds and fledglings they produced in 2004 by nesting habitat based upon direct measurement (71% of birds, 69% of fledglings) and estimation (*) from measurements of reproductive success (= RS) in the same kind of nesting habitat in other years.

NESTING HABITAT	FORAGING HABITAT+	LOCATION#	BIRDS	RS	FLEDGLINGS
Cattail					
	REF, RICE	Delevan NWR	136,000	1.07	97,013
	CVAG	Gun Club Rd.	25,000	0.50*	8,333*
	CVAG	Meadowlark	25,000	0.00	0
	CVAG	Glory Hole	12,000	0.50*	4,000*
	DRY	Potter Valley (1)	400	0.50*	133*
	DRY	Marsh Creek	3,000	0.50*	1,000*
	RICE	Sunsweet	400	0.50*	133*
	DAIRY	Toledo Pit	100	0.00	0
	DRY	Saucido Rocks	20	0.00	0
	UNK	Kern	2,000	0.50*	667*
	RICE	Conaway Ranch	2,000	0.50*	667*
Subtotals			**205,920**		**111,946***
(% of total)			**(51)**		**(50)**
Himalayan blackberry					
	RICE	Butte h.c.	25,000	1.50	25,000
	DRY	Milton	17,500	2.00*	20,000*
	CVAG	O'Neill Forebay	7,500	0.04	200
	DRY	Potter Valley (2)	300	2.00*	400*
	CVAG	Highway 140	3,000	2.00*	4,000*
	CVAG	Highway 165	900	2.00*	1,200*
	RICE	Colusa Drain	3,000	2.00*	4,000*
	RICE	Roads P and 60	500	2.00*	667*
	RICE	Harter Land Co.	2,500	2.00*	3,333*
	RICE	Bryant	1,000	0.00	0
	UNK	Yreka (2 broods)	150	2.00*	200*
	RICE	Meridian (partial)	4,000	0.00	0
Subtotals			**65,350**		**59,000***
(% of total)			**(16)**		**(26)**
Nettle					
	DRY	Wind Wolves (7)	9,915	2.00	13,220
	DRY	Wind Wolves (1)	100	2.00*	133*
	DRY	Santiago Springs	6,750	2.00*	9,000*
	DRY	Maricopa W. B.	2,000	2.00*	2,667*
	DRY	Klipstein Canyon	50	2.00*	67*
	UNK	Klamath	350	2.00*	467*
	UNK	Kern 4/8	100	2.00*	133*
Subtotals			**19,265**		**25,687***
(% of total)			**(5)**		**(12)**

Table 2. (cont.)

NESTING HABITAT	FORAGING HABITAT+	LOCATION#	BIRDS	RS	FLEDGLINGS
Silage					
	DAIRY	Road 88	5,000	0.00	0
	DAIRY	TeVelde	36,000	0.30	7,200
	DAIRY	Producers Dairy (two fields)	33,500	0.30*	6,600*
	DAIRY	Producers Dairy (third settlement)	14,000	0.00	0
	Subtotals		**88,500**		**13,80***
	(% of total)		**(22)**		**(6)**
Willow					
	RICE	Meridian (partial)	**17,000**	1.00	**11,333**
	(% of total)		**(4)**		**(5)**
California blackberry					
	RICE	Meridian (partial)	**4,000**	0.00	
	(% of total)		**(1)**		
Tamarisk					
	UNK	Corcoran Rd	**600**	1.80*	**720***
Bulrush					
	DRY	Monterey (1)	200	0.50*	67*
	DRY	Monterey (2)	600	0.50*	200*
	DRY	Solano	300	0.50*	100*
	Subtotals		**1,100**		**367***
Desert olive					
	DRY	Monterey (3)	300	1.00*	200*
	DRY	Monterey (4)	20	1.00*	14*
	Subtotals		**320**		**214***
Tree willow		Meridian (partial)	**30**	0.07	**2**
TOTAL			**402,085**		**223,069**

+=Foraging habitats are primary habitat; rice fields (RICE), Central Valley irrigated agriculture (CVAG) exclusive of fields near dairies (DAIRY) and dry rangeland (DRY). REF is the dry complex of vegetation at Delevan NWR. UNK is unknown to the author.
#=See appendix for further information on colonies, including county.
*=RS values based upon average performance in other years. RS values for colonies with no asterisk were measured (Table 1).

Table 3. Estimated distribution of a sample of nesting Tricolored Blackbirds and fledglings they produced in 2004 based upon direct measurement (71% of all birds) and estimation from measurements of reproductive success in other years (29%).

CATEGORICAL DIVISIONS OF ALL OBSERVATIONS	BIRDS(%)	FLEDGLINGS(%)
By foraging habitat		
Wetlands and irrigated lands		
Foraging in rice and on Delevan NWR near rice	195,430 (49)	142,148 (64)
Agricultural, pulsed irrigated wetland	73,400 (18)	17,733 (8)
Pulsed irrigated wetland near dairies and silage	88,600 (22)	13,800 (6)
Dryland foraging, grasslands, mostly cattle rangeland	41,455 (10)	47,068 (21)
Unknown	3,200 (1)	2,187 (1)
By primary foraging habitat origin		
Native plants	0	0
Exotic plants	402,085 (100)	222,936 (100)
By nesting habitat origin		
Native plants, mainly emergent marsh vegetation	247,645 (62)	149,416 (67)
Introduced plants	154,440 (38)	73,520 (33)
By ownership of colony site		
Private	221,535 (55)	121,656 (55)
Public	180,550 (45)	101,280 (45)
National Wildlife Refuges and State Wildlife Areas		
NWRs	173,000 (43)	101,013 (45)
California State Wildlife Areas	7,500 (2)	200 (<1)
Other	221,585 (55)	121,723 (55)
Sacramento, San Joaquin valleys		
Sacramento Valley	195,430 (49)	142,148 (64)
San Joaquin Valley	164,600 (41)	32,920 (15)
Mountain foothills, San Joaquin Valley	36,315 (9)	45,554 (20)
Other	5,740 (1)	2,314 (1)
Totals, within each category	**402,085**	**222,936**

historically settles this site but usually fails to produce substantial numbers of fledglings due to diurnal predation by Black-crowned Night-Herons (*Nycticorax nycticorax*). Due to management changes in individual marshes, the large cattail marsh site at the Capitol Outing Club was drained at the usual time of Tricolor settlement in May and June. Dry cattail marshes are not colonized by Tricolors. However, the Delevan NWR colony is only 7 km north of this site.

Himalayan blackberry

Himalayan blackberries are exotic invasive plants particularly difficult to control in riparian settings. Himalayan blackberries were a commonly used nesting substrate adjacent to rice fields in 2004 (Table 2). In 1994 we found over 119,000 Tricolors foraging in rice settings, but only 7,250 of them were based in Himalayan blackberry colonies (Hamilton et al. 1995). The difference between these years may be a response to overwhelming Black-crowned Night-Heron predation in cattail marshes, losses of cattail substrates or increases in the distribution and robustness of Himalayan blackberry thickets. Specific cattail sites where 90,000 Tricolors nested in 1994 were either not maintained or were destroyed by 2004.

The 36,000 estimated Tricolors found in six colonies nesting in Himalayan blackberries in the midst of rice included one highly successful colony as well as several smaller colonies that lost nestlings to night-herons. Some of the difference between colonies in susceptibility to night-heron predation may be stochastic, but differences may also be attributed to variations in blackberry copse configuration. Tricolors tend to select dense broad blackberry thickets cascading into canals (pers. obs., Sacramento Valley). This configuration supported the largest successful colony (Table 2) and other colonies where RS was not measured. The blackberry component of one large blackberry-willow colony (Table 2) was completely destroyed by night-herons that stood on these brambles and probed to extract eggs and small chicks (pers. obs., May 2004). The portion of this colony in limber sandbar-type willows (*Salix* sp.) successfully fledged chicks. Only one of 30 nests in a tree-type willow at this colony was successful (Tables 2, 3).

The silage issue

Hamilton (2003) showed that saving silage colonies had no demonstrable effect upon the rapid decline of the global Tricolor population and suggested that habitat losses might be more destructive to Tricolor populations than catastrophic nesting mortality. An alternative hypothesis, represented by the petition to list Tricolors as endangered (Center for Biological Diversity 2004), is that silage colony nest losses are a sink (e.g., Pulliam 1988), destroying enough nests to induce global population decline and create the potential for imminent extinction. Supporters of both alternatives agree that a steady and rapid population decline is in progress.

So the issue is not whether or not to emphasize protection or management of Tricolors. Instead, alternative population regulation hypotheses suggest alternative management priorities. If silage colonies are sinking the global Tricolor population a concerted effort needs to be made to find and protect all such colonies, and there may not be resources to do anything else. If habitat loss is eroding populations it is essential to identify all actual and potential habitat and to protect it from loss.

Silage nesting was initiated as early as March 25 (Kern County) and as late as April 20 (TeVelde, Tulare County). Within large colonies nesting may be initiated for up to three weeks. If conditions within a colony are favorable, re-nesting may occur, extending the interval protection is required to protect nests. This broad range means that any program to protect silage colonies cannot rely upon a one-weekend survey. A group of observers would be needed to hunt for colonies from late March throughout April.

The TeVelde colony was observed to produce low RS (0.3, Table 1) and the Producers Dairy is presumed also to have failed based upon predator trails and the small number of fledglings seen there (Table 2).

Rice

Rice is unavailable as a habitat at the beginning of the San Joaquin Valley breeding season in late March through April (Hamilton 1998) and is therefore not an alternative to silage nesting. Rice nesting cannot be observed by a survey conducted in April. In 1994 we noted that "rice habitat Tricolored Blackbirds were 19.2% of all Tricolored Blackbirds observed nesting in 1994" (Hamilton et al. 1995, p. 27). This is certainly an underestimate of the proportion of all nests made in the vicinity of rice because nesting in the rice areas came late in the season in the Sacramento Valley and we could not "generate the kind of coverage we put into the San Joaquin Valley" (Hamilton et al. 1995, p. 27). The comparable figure for the far *more* limited search for rice colonies in 2004 is 49% of a substantially smaller and less randomly acquired sample. Despite these caveats, it is possible that rice now is providing half of all breeding Tricolor foraging habitat (Table 3). It will take a season-long survey to make a reliable estimate.

Rice is a favorable habitat for Tricolor management because impacts of nesting Tricolors upon the crop are light compared with silage. Damage to rice is primarily loss of seeds and germinated seedlings when water is drawn down early in the cultivation cycle. Throughout the Sacramento Valley a few Tricolors may forage on rice fields soon after flooding but they do not arrive *en masse* to nest for several weeks. In this analysis I found an estimated 64% of all fledglings produced in colonies adjacent to rice cultivation, with 44% of that total attributable to a single cattail colony on Delevan NWR. This site, dried and re-contoured after the 2000 breeding season, is maintained as a permanent wetland until August after other wetlands on the refuge are drained from mid-March through May (Mike

Wolder, USFWS, pers. comm.).

The extent to which rice-related colonies should be managed may depend upon the status of the global population and what we find in 2005 and subsequent years to be the importance of rice to the overall Tricolor population. The only current limitation to use of rice by Tricolors seems to be the absence of suitable nesting sites in the immediate vicinity of rice fields. The principal deterrent to Tricolor productivity in the rice nesting areas is predation by Black-crowned Night-Herons.

Dry-land habitats

The estimate that 22% of Tricolors in 2004 fledged in colonies where dry rangeland provided the primary foraging habitat is a particularly hopeful discovery. Development of these sites, particularly in the foothills of the San Joaquin Valley, may be more cost effective than attempting to create suitable habitats near dairies. However Beedy (pers. comm.), reading this account, noted that there are "large areas in the foothills (e.g., Yuba County) where extensive Himalayan blackberries, canals, and wet pastures appear to provide highly suitable breeding and foraging habitat but where colonies have not been reported." There was a 13,500-bird colony in Yuba County in 1994 (Hamilton et al. 1995).

Since 2000, ongoing management of the San Emigdio Ranch, Kern County, by the Wind Wolves Conservancy has enhanced its Tricolor breeding productivity. In 2004 it produced 8% of all observed and estimated Tricolor productivity (Tables 2 and 3). Actions favoring Tricolors there include livestock exclusion from core wetland vegetation at some springs, ponds, and narrow gully riparian watercourses vegetated with cattails and nettles (*Urtica holosericea*). Livestock gain access to water downstream from springs. Similar management could be implemented on private ranchlands lining both sides of the Central Valley.

Conclusions

Absence of Tricolors from any fully suitable habitat within the geographic distribution of this species is a matter of concern. Are suitable habitats unused because overall numbers are suppressed, e.g., because of breeding colony failures? A better resolution of this question requires a full season intensive search. Large colonies may develop and fail in less than three weeks, leaving the impression to anyone observing at any other time that no birds attempted to nest there.

Active colonies settled in silage need to be protected, but the implication that the ongoing decline of Tricolor populations is mostly due to harvesting of silage fields by dairy farmers (Center for Biological Diversity 2004) is not based upon a comprehensive analysis of existing data. Important conservation priorities of Tricolors are not limited to protection of the silage field nesting colonies in the San Joaquin Valley.

Opportunities to manage, create, and maintain Tricolors throughout their distribution are being overlooked. We need to respond to the collapse of the southern California (Unitt 2001) and Sacramento County (Beedy and Hamilton 1997) populations. There is a loss of colony nesting sites and foraging habitats in progress throughout most of the distribution of the species (Hamilton 2003). This persisting loss of habitat needs to be identified and places where Tricolors can reproduce successfully need to be maintained. Numbers in this report suggest Tricolored Blackbird reproductive success can be supported with a variety of proactive management practices throughout the distribution of the species. Private ranchlands lining both sides of the valley have the potential to benefit Tricolors and other declining bird species. A vast expanse of suitable foraging habitat is also present in the millions of acres of California rice fields. The National Wildlife Refuges are a source of core support for Tricolor populations. In some cases colony production at these sites can be increased if the species is identified as a management priority. Declaration of Tricolor habitat as a priority is also necessary to get planning agencies in southern California to commit to habitat development.

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APPENDIX. Colonies listed in Table 2 are as follows: Delevan NWR = Delevan National Wildlife Refuge, Colusa County; Gun Club Rd. = site in Merced County; Meadowlark = site on Merced National Wildlife Refuge, Merced County; Glory Hole = site on Merced National Wildlife Refuge, Merced County; Potter Valley (1) = cattail marsh in Potter Valley, Mendocino County; Marsh Creek = site in Contra Costa County; Sunsweet = site in Yolo County; Toledo Pit = Toledo Pit storage basin of the Lower Tule Irrigation District, Tulare County; Saucido Rocks = site in Santa Barbara County; Kern = a site reported in Kern County; Conoway Ranch = site in Yolo County; Butte h. c. = Butte hunting club in Butte County; Milton = Rock Creek, Milton, Tehama County; O'Neill Forebay = site in Merced County; Potter Valley (2) = site in Mendocino County; Highway 140 = a site along this highway in Merced County; Highway 165 = a site along this highway in Merced County; Colusa Drain = site in Colusa County; Road P and 60 = intersection these roads in Glenn County; Harter Land Co. = Harter Land Company, Glenn County; Bryant = a site in Sutter County; Yreka = a site along Interstate 5 south of Yreka in Siskiyou County; Meridian = site in Sutter County; Wind Wolves (7) = sum of seven colonies at Wind Wolves Conservancy, San Emigdio Ranch, Kern County, where RS was measured in 2004; Wind Wolves (1) = one colony at Wind Wolves where RS was not measured; Santiago Springs = site in Kern County; Maricopa W. B. = Maricopa Water Bank, Kern County; Klipstein Canyon = site in Kern County; Klamath = site in Klamath County (OR); Kern 4/8 = a site in Kern County; Road 88 = site in Kern County; TeVelde = site in Tulare County; Producers Dairy = site in Fresno County; Corcoran Road = TLDD levee, Kings County; Banks (1 through 4) = four sites surveyed by James Banks in Monterey County; Solano = site in Solano County.

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TRICOLORED BLACKBIRD 2000 BREEDING SEASON CENSUS AND SURVEY – OBSERVATIONS AND RECOMMENDATIONS

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Executive Summary

Numbers of Tricolored Blackbirds, *Agelaius tricolor* (tricolors), fell precipitously during the 1990s, from 370,000 estimated individuals in 1994 to 240,000 in 1997 and 162,000 in 2000. A count of 105,000 in 1999 is considered in the text and is considered an underestimate. The latest population estimate comes from a United States Fish and Wildlife Service (USFWS) sponsored Census conducted between April 21 and 24, 2000. In addition, a season-long survey was conducted to identify, insofar as possible, all additional tricolor breeding sites present before and after the date of the Census.

In this report reproductive success (RS) measures the proportion of successful nests and the number of fledglings they produce. RS of year 2000 colonies is given for alternative kinds of habitats by nesting substrate and foraging habitat. Reproductive effort (RE) measures use of time by adults during the nesting season. RS/RE is reproductive efficiency. Of all tricolor RE *for the season* 58.9% was at the 10 largest colonies. When nearby (within 5 miles of each other) colonies were merged for the entire 2000 breeding season and the 10 largest colony clusters are aggregated, these concentrations absorb 76.2% of the seasonal RE. Colony clusters are found in largely agricultural regions. Birds associated with colonies comprising colony clusters use exclusive foraging areas. These colony clusters are associated with large and productive foraging areas.

Grain and silage fields in the San Joaquin Valley accounted for 30.0% of the RE. Four colonies lost to harvest operations accounted for 4.1% of the annual RE. A USFWS purchase of the substrate crop at two colonies sheltered 14.2% of the observed RE and produced 12.0% of the season's fledgling crop (RS). Tricolors nested at Merced National Wildlife Refuge in heavy infestations of thistles and mustard in wheat planted for wintering geese. These fields were successfully managed for tricolors and accommodated 11.7% of all tricolor RE.

Collectively, colonies foraging in rice fields in the Sacramento Valley produced 34% of all year 2000 fledglings (RS). Nesting in cattails (*Typha*, 2 *spp.*), and bulrushes (*Schoenoplectus, 3 spp.*) associated with foraging for insects in rice accounted for 26.3% of the season's RE. Additional rice field foraging from nests in adjacent wild rice added another 4.2% to the overall RE.

Most of the causes of tricolor declines in abundance are known based upon observations during the 1990s of specific habitat changes. Causes of loss of colony sites and foraging habitat are evident and remedies are equally obvious. Management priorities should be to: 1) locate existing colonies and protect them and their associated foraging habitat, 2) manage mitigation associated with development to incorporate colony sites and their associated foraging habitats, 3) establish agreements with the rice, dairy and cattle industries to protect existing colonies and their habitats, 4) acquire easements or title to at-risk nesting and foraging habitats, 5) quantify population trends and their determinants and 6) identify life history characteristics critical to informed evaluation of management strategies.

Recommendations Review

The tricolor problem is spatially immense and differs in its characteristics by area. It is also not a classical management problem because the salient feature of tricolors, breeding and flocking in massive single-species swarms, cannot be preserved by maintaining the species at some minor abundance. Because tricolors completely overlap private property in the Central Valley, listing them as endangered would be disruptive and counterproductive. The alternatives are to encourage landowners and agencies to provide and maintain habitats. In this report and in earlier reports and publications (Hamilton et al. 1995, 1999; Beedy and Hamilton 1997, 1999) we have identified multiple management responses to the tricolor decline problem. These are summarized below.

Management

1. Emphasize further development of habitats favorable to successful reproduction in enduring settings. Take action to support the protection, enhancement and creation of such suitable habitats (Hamilton et al. 1995, #8c, f; Beedy and Hamilton 1997, pg 21; Hamilton et al. 1999, #11). Use HCPs as one imperfect vehicle to accomplish this (Hamilton et al. 1995, #8b; Beedy and Hamilton 1997, pg 24; Hamilton et al. 1999, #4).

2. Manage all public refuges and lands actively where tricolors regularly settle. Improve conditions favoring successful reproduction at existing colonies and colony sites including management of water levels (Hamilton et al. 1995, #8c; Beedy and Hamilton 1997, #6; Hamilton et al. 1999, #8) and management of predators (Hamilton et al. 1995, #8d; Beedy and Hamilton 1997, #6; Hamilton et al. 1999, #7).

3. Canvass the geographic distribution of tricolors for sites lacking one element of tricolor habitat requirements and forward this information to planning agencies. Include dairies, rangeland, highways (CALTRANS cloverleafs) and other sites (Hamilton et al. 1999 #10, DeHaven 2000).

4. Identify tricolor colonies in the path of destruction and protect them, by consent of cooperating parties, seasonal buyouts and in the long term by purchases of land and easements (Hamilton et al. 1999, #11). We have participated in the first two and recommend the latter (Hamilton et al. 1995, #8c; Beedy and Hamilton 1997, pg 20; Hamilton et al. 1999, #6). Tell colony site owners what they are supporting, why tricolors are important, and offer them incentives to encourage tricolors. Investigate the cost to dairies of accommodating tricolor colonies. (Beedy and Hamilton 1997, #5, pg 20, #6, pg 23).

5. Identify all utilized habitats and colonies on an ongoing basis. Identify successful and failed colonies and the causes of colony and reproductive failures. This is my recommendation for the 2001 sequel to the annual Census (Hamilton et al. 1995, #9a; Beedy and Hamilton 1997, #8, page 25; Hamilton et al. 1999, #5, #7).

6. Investigate the cost to dairies of accommodating tricolor colonies. Develop easement programs for dairies and rice growers to support tricolors. This should include funding to secure any resources favoring tricolors wherever they settle (Hamilton et al. 1995, #8b, c; Hamilton et al. 1999, #'s 13, 14).

Science

7. Further investigate life history characteristics of this species, especially demographic population responses such as density dependence, foraging habits and their reproductive outcomes, movements and wintering habits (Beedy and Hamilton 1997, #7; Hamilton et al., 1999 #5).

8. Identify interspecies interactions with this species and its habitats (Hamilton et al. 1995, #9b; Beedy and Hamilton 1997, #8; Hamilton et al. 1999, #7). Tricolors do not at present seem to fit well into the popular multispecies concept of management. The ibis relationship and winter habitat associations are promising places to look (Hamilton et al. 1995, #9b).

9. Determine taxonomic status of Southern California population to determine if it is a genetically discrete population (Beedy and Hamilton 1997, #8; Hamilton et al. 1999, #7).

Oversight

10. Establish a scientific committee to review recommendations and direct study objectives (Hamilton et al. 1999, #1). Submit findings of this research to relevant action-oriented groups. Proposals for action in support of tricolors have been submitted by me to all of the following: USFWS, CDFG, Partners in Flight, the Packard Foundation, the Bureau of Reclamation, the California Farm Bureau, the California Rice Growers, various water districts, individual property owners and The Cattlemen's Association. (Beedy and Hamilton 1997, #6, page 23; Hamilton et al. 1999, #'s10, 14).

Education

11. Emphasize the relative importance of tricolors as the most highly colonial North American land bird species and as one of nine California endemics and as a natural spectacle. There is at present little awareness of this species outside the limited group of birders and their respective organizations. Educate the public regarding the status and grandeur of this species and its colonies and gatherings. (Hamilton et al. 1995, #8a; Beedy and Hamilton 1997, #6).

Introduction

Tricolored Blackbirds are largely (> 95% of all individuals) endemic to California. Breeding tricolors nest in colonies but, unlike their sympatric congener, Red-winged Blackbirds (*Agelaius phoeniceus*), they forage away from their nesting habitat. Dense tricolor settlements form either in spiny vegetation (including wheat, quail brush (*Atriplex*), blackberries (*Rubus*) and mesquite (*Prosopis*)) or in flooded vegetation, especially emergent marsh vegetation (cattails (*Typha* spp.), bulrushes (*Schoenoplectus spp.*), wild rice and in woody plants such as tamarisk (*Tamarisk*), willows (*Salix* spp.) and mulefat (*Baccharis viminea*) (Beedy and Hamilton 1999). Details of tricolor population biology are given in Neff (1937), (DeHaven et al. 1975), Beedy et al. (1991), Cook et al. (1993), Hamilton et al. (1995, 1999) and Beedy and Hamilton (1997, 1999), Hamilton (1998) and Hamilton et al. (1995, 1999). Tricolor life history information is in Orians (1961), Orians and Christman (1968), Collier (1968), Payne (1969), Cook (1996), Hamilton et al. (1995), Hamilton (1998) and Beedy and Hamilton (1999). Relevant life history and population biology comparisons with Red-winged Blackbird are in Orians (1961), Orians and Christman (1968), Collier (1968), Payne (1969), Beletsky (1996), Beletsky and Orians (1989, 1996) and Weatherhead and Dufour (2000). Recent (2000) and past (1931-1999) measures of tricolor distribution and abundance are in Neff (1937), DeHaven et al. (1975), Beedy et al. (1991), Hamilton et al. (1995, 1999), Beedy and Hamilton (1997) and in this report.

Previous summaries identify a continuous precipitous population decline (Cook et al. 1993, Hamilton et al. 1995, 1999, Beedy and Hamilton 1997), correlated with and probably caused by continuing loss of habitat in the Central Valley and in Southern California (Hamilton et al. 1999).

Methods

Pre Census workshop

The workshop was held at Santa Nella (Merced County) to coordinate the Census and to train participants in methods of estimating the number of birds in flocks and colonies. Santa Nella was selected as the site for the workshop because it is central to the population of Census tricolors. The workshop demonstrated that participants could develop skills and confidence in accurately estimating colony size and bird flock size.

The Census

The 2000 Census was supported by USFWS and coordinated by Bill Hamilton, UC Davis and Bob Barnes, California Audubon Society (NAS). Bob Barnes served as a catalyst and drew more attention to the Census than we received in 1999, accounting for the new high in number for participants filing reports. This Census attempted 1) to locate all Tricolored Blackbird colonies throughout their current (April 21-24, 2000) distribution in California, 2) to estimate their numbers and 3) to determine the outcome of their nesting activity. Focus on a particular date avoided

redundant counts of the same individuals as they moved about during the breeding season (Hamilton 1998).

In previous years we used a three-day (Friday-Saturday-Sunday) interval for the censuses, emphasizing Saturday. Friday accommodates agency people. In 2000 including Monday to further attract participants accounted for only 1,754 additional birds. As in previous years after the Census date, further observations by Hamilton, DeHaven (USFWS) and Clendennen (Wind Wolves Reserve) were included if birds were present, based upon stage of breeding evidence, but not observed on the Census date.

The April Census effort was similar to that of 1999 (Table 1, Appendices 1-3). Coordination, forms and methods for reporting colonies were held nearly constant (Appendix 4). Total colony sites, occupied and empty (former colony sites with no birds) provides information about the thoroughness of the Census.

The Census effort in 2000 produced uneven coverage of the tricolor breeding range. Heavily agricultural regions in the Central Valley in particular are at present little known and seldom visited by birders, ornithologists or agency personnel participating in the Census. In 2000 and in other years experienced observers (Mark Chichester, Richard DeHaven, Sam Fitton (BLM) and the author) located large colonies in the San Joaquin Valley not reported by any other observers in the past (e.g., Beedy at al. 1991, DeHaven et al. 1975; but see Collier' 1968). The degree of completeness of the Census can be evaluated by determining the fraction of known colonies reported redundantly by other observers. An evaluation of redundant reports suggests that San Joaquin Valley silage colonies and small foothill ponds and springs (Clendennen, Ranlett) are sites most likely to be overlooked by Census observers. Participation in a short-term search is most valuable if an informed observer searches familiar lands.

Some sites were not visited due to access (Phil Unitt, San Diego County) and manpower limitations, especially foothill sites on both sides of the Central Valley. Nevertheless, the method of the Census and the survey, to reinvestigate all known breeding places and to search for new ones, has become an increasingly complete assessment of Tricolored Blackbird distribution and abundance. The 2000 Census probably located a greater proportion of the entire population than did censuses in previous years (Table 2).

Additional reports and personal observations of colonies were compiled throughout the season providing the entire breeding season survey (Appendix 5).

Estimating colony size. There are two ways the number of birds at colonies was estimated. 1) Raw estimates by the participating observers were used if a follow-up by the author could not be made. 2) At all other colonies (n = 20) the author made the original estimate and adjusted it as follows. Several transects were made through the colony, the number and density of active and inactive nests was determined and all nests were marked. Later, after all birds had vacated the colony, the estimated number of empty nests found along more extensive transects was determined. The estimated total number of active nests at the time of the original transect was adjusted based upon linear transects through the colony and mapping of the extent of the colony (see Hamilton et al. 1995). The proportion of active nests at a colony during the nesting season times the number of nests found at the end of the season gives an estimate of the number of females present at that time.

This number is multiplied by 1.5 to include males, a convention of Orians (1961) and Payne (1969) who determined that there was one polygynous male on the average for every two females at breeding colonies. This correction was not possible for the renesting birds at Merced NWR because no transects could be established without disrupting ongoing nesting activity.

Reproductive success (RS)

All accounts of RS in this report were based upon observations S. G. Herman (Evergreen State College) and the author. In a study of Red-winged Blackbirds Weatherhead and Dufour (2000) found a positive relationship of higher RS, as measured in this analysis, to population outcomes in following years. We determined RS by marking or observing nests and their fate immediately prior to fledging (Hamilton et al. 1995). RS was determined as follows:

Method 1. This analysis depends upon the relatively synchronous nesting of tricolor colonies. We either entered colonies or observed known stages of development such as nest building or the end of most male song signaling completion of egg laying and commencement of incubation of the last laid egg. At or near hatching colonies were again revisited and a series of 10 to 30 nests *at the same stage of development* were marked. The percentage of empty nests at this time also was noted. When the oldest nestlings were eight days old the colony was again visited and the number of active nests and number of nestlings per nest noted. At this stage it was also possible to search along an additional unmarked transect crossing the initially marked transect at right angles.

Method 2. If it is impractical to mark nests before eggs hatch, a series of nests can be located when or before the most developed nest is eight days post-hatching, a method comparable to that reported by Beletsky and Orians (1989) for Red-winged Blackbirds. In this way no nests that have fledged young can be mistaken for failed nests. *This procedure is valid only for first nesting attempts at each site.* Observations of subsequent nesting attempts may confuse failed nests with successful but empty nests from an earlier nesting cohort.

After the season when colonies are empty, more extensive transects are made. RS was measured at 20 colonies including the four failed silage colonies (Table 3 plus failed colonies). These data are essential to the estimation of fledgling production. Numbers from these measurements combined with reproductive effort, below, if extensive, can be used to predict the following year's population.

Reproductive effort (RE) and reproductive efficiency (RE/RS)

RE measures are based upon the global estimate of the tricolor population made by the Census, additional survey work and measures of RS at colonies. Reproductive efficiency is RE/RS. It is simply a measure of the effectiveness of time in producing fledglings.

Percentages (RE, Table 4) are the fraction of all time available during the season allocated by all tricolors to each colony. RE, if based upon perfect measurements of RS and of the size of the world population entering the breeding season, would

sum to 100%. But the size of the world population, the size of colonies and the proportion of nests that failed and when they failed all were measured imprecisely. Nevertheless, these are the only data available to estimate the productivity of colonies in alternative habitats. As such they provide data useful in evaluating the effectiveness of management investments to produce fledglings.

The global tricolor population was estimated to be 162,000 adults entering the 2000 breeding season (Table 1, Appendix 1). I assumed half of these birds (81,000) were females. For the 90 available breeding days (Hamilton 1998) minus 10 da for movement and recovery between successive nesting attempts (Payne 1969) there were thus estimated to be two times 81,000 or 162,000 tricolor female breeding days. There were substantially more than 162,000 nesting attempts because of nest failures and subsequent renesting efforts. To determine the percentage of the season's time expended at any particular colony, I determined the number of bird days spent there and divided by 81,000 times 80. These calculations, given in Appendix 6, produced estimates of RE (Table 4) and assume that all females actively nest and renest throughout the breeding season. This assumption is based upon our failure to find any substantial number of adults not actively breeding during the breeding season.

Adult mortality. Conversion of fledgling production to following year breeding adults requires an estimate of annual survivorship. But Tricolored Blackbird post fledging and adult mortality rates are unknown! Thus, no exact prediction of how many birds will enter the 2001 breeding season can be made. Information estimating survivorship in this report comes from studies of Red-winged Blackbirds (Beletsky and Orians 1989), an unsatisfying best-available-data approach. However, the values used here are within the range of values for known populations of songbirds of this size. When these estimates are applied to actual fledging data we (Hamilton et al. 1995) calculated that protection given to colonies in the mid-1990s would have had a substantial impact upon populations in subsequent years (Table 5).

Results

Comparison of 1999 and 2000 censuses

Some departures of numbers of tricolors at particular sites and localities in 2000 from reports in 1994, 1997 and 1999 are summarized in Table 6. These data show irregular annual local occurrence and abundance. While earlier authors commented on the illogical nature of these changes (see Beedy and Hamilton 1999) in most cases probable explanations for most local changes can be provided (Appendix 7).

The number of colonies found on the Census date increased from 53 in 1999 to 71 in 2000 (Table 1). Much of this increase is accounted for by the addition of small colonies in the foothills on both sides of the Central Valley (Figure 1). Ten small colonies in Kern and Placer counties compare with none in the same places in 1999 at the time of the Census (Clendennen, Coast Range foothills, Kern County; Ranlett, Sierra foothill locations Placer County). Five of the six Wind Wolves colonies were active later in the season in 1999, but did not settle until after the Census date and thus were not counted in the summary of the 1999 Census

investigation effort. Addition of these small colonies to Census observations in 2000 were the result of energetic and time-consuming search for colonies by local observers over a period of years, and by observers recruited to participate in the four-day search.

Participation in 2000 by Richard DeHaven, a highly experienced tricolor observer who searched agricultural fields in the San Joaquin Valley in the 1970s resulted in a substantial increase (by about 15,000 birds) in the number of tricolors located in the San Joaquin Valley. If DeHaven had not participated the Census total could have been as low as 147,000. DeHaven's (2000) method was to search extensively based upon several years of experience locating tricolor colonies (DeHaven et al., 1975).

A series of unfavorable local situations negatively impacted 1999 breeding outcomes (Hamilton et al. 1999). Several conditions were more favorable for tricolor breeding in 2000, summarized quantitatively in Table 6. Favorable events in 2000 were the buyout and/or success of the TeVelde and George colonies (Tulare County) the Delevan NWR and Hills Duck Club colonies (Colusa County) and Merced NWR colonies (Merced County). In addition, a greater proportion of all tricolor breeding in 2000 was on government lands (Merced NWR, Delevan NWR) than in previous years. They were highly successful (Appendix 1).

These colonies were in protected settings. Conditions at these sites following fledging may have favored better survival than the one-third estimation used here. Heaviest losses of fledglings are thought to come in the weeks immediately following fledging. Favorable conditions at this stage are produced by situations where the substrate remains habitable, as in marshes and blackberry thickets where water is immediately available. Early dispersal of fledglings and their parents to crèches near water and food, as is necessary for some silage field colonies, may impose higher losses upon fledglings. Circumstances at the Producers Dairy, Fresno County (1994, 1999), Merced NWR (2000) and at the TeVelde Ranch (2000) were particularly favorable because the silage nesting substrate provided persistent cover and access to open water remained available until tricolors and their fledglings voluntarily dispersed. Once tricolor nestlings fledge, marshes provide ideal maturation sites for fledglings.

The central conclusion of the Census and survey is that tricolors are continuing to decline precipitously in numbers, from millions in the 1930s (Neff 1937) to an estimated 750,000 in 1975 (Udvardy 1977), 370,000 as of the 1994 Census and 162,000 in this account for 2000. The conclusion that tricolor numbers are plummeting is based not only upon these data, but also on the collective experience of local experts throughout California who have observed tricolors over long intervals (Liz Cook and Ted Beedy, Sacramento County; Bill Hamilton, Yolo County; Richard DeHaven, Central Valley; Sam Fitton, San Joaquin Valley and Coast Range; Phil Unitt, San Diego County and others). Tricolors are a diminished natural spectacle in the Central Valley and in Southern California, the former strongholds of this species.

Ownership of habitat

About 31% of all tricolor reproductive effort was based upon nests placed on publicly owned property (Appendices 1, 5). This is higher than in most other years. However, these secure nesting sites depend upon the far less secure surrounding private lands. Tricolors select colony sites following spectacular *en masse* reconnaissance flights (Orians 1961) that cannot precisely predict the immediate future of the habitats they depend upon. Conversion of weedy fields and other habitats to cotton, vineyards and other substrates during the breeding season after tricolors have settled, as occurs occasionally, defeats colonies and wastes RE because adults continue to provision small and weak broods. As in previous years (Hamilton et al. 1995) over 90% of all foraging activity was on private property. The largest publicly owned foraging arena in 2000 was associated with the Merced NWR colonies, but these colonies also depended in part upon private lands and dairies (Woolington, pers. comm.).

Regional changes in abundance

There was a dramatic increase in the number of birds present in Merced County (Table 6, Appendices 1, 6) not attributable to increased observer effort. We (USFWS, CDFG, UCD) made a thorough search of Merced County west of Highway 99 in 1994, 1995, 1997, 1999 and 2000, as did others. Both USFWS and CDFG personnel live in this area and regularly travel local highways and roads. Interpretation of this change from 1999 and other years is included in Appendix 7.

Reproductive success and reproductive effort

Determination of the quantitative impact of reproductive losses upon population trends depends upon measures of demographic variables such as fledgling survivorship, annual survivorship of adults and number of breeding attempts. Mean RS for all monitored colonies is about 0.9 fledglings per female per nesting attempt (Table 3). If Census plus Survey counts of breeding birds estimate the global population total nests for the season (219,000) divided by the estimated population of females entering the breeding season (81,000) yields 2.7 nesting attempts per female per season.

The estimated reproductive effort (RE) lost to nests before fledging (RS) in Table 4 depends upon Census data estimating the whole population and identifying the duration of the breeding season. In 2000 the interval from the laying of the first to the last egg was somewhat more than 90 days, but there were relatively few and relatively small colonies at the extremes.

The match of the Census total to the observed RE (94.6 % in Table 4) was unexpectedly close and it is tempting to normalize these data to achieve a perfect match but this was not done. Comparison of these two data sets, collected in entirely different ways, suggest that an approximately equal effort was expended to obtain them. Both were more or less equally limited by property access and manpower constraints. The same people were responsible for about half the

estimates of the number of birds in colonies and about half of the same data entered into both summaries.

Dairy and grain associated colonies. Over 40% of all Tricolored Blackbird RE in 2000 was associated directly with dairies in the San Joaquin Valley and Southern California. Four colonies, one in Fresno County, two in Kings County and one in Tulare County were lost to harvest, accounting for 4.1% of all RE (Table 4).

Reproductive success in silage was 0.6 when failed and successful colonies were lumped (79,000 birds). When the 20,000 birds breeding in failed colonies are excluded RS was 1.0 per nest.

Silage and grain colonies near dairies accounted for 28.8% of all RE (Table 4). At and near dairies birds may nest in silage, cattails, Himalaya Blackberries, or in other nesting substrates (>41.5 % of seasonal RE, Table 4). Of this amount 11.7% was on the secure Merced NWR. Of the silage habitat, 14.2% of all RE was protected from destruction by USFWS purchase. But 14.2% is not the reproductive efficiency. When part of or all nests at colonies are lost, birds losing nests are freed to nest elsewhere. Assuming harvest losses occur midway through the breeding cycle, RE saved is half 14.2% or 7.1% and the number of fledglings saved by buyout intervention is proportionately less.

In recent years at Merced NWR when cattails but not thistles were available as a nesting substrate (except 1991, 'Glory Hole' cattail pond) there were no or small (<2000) colonies in this area. This year colonies nested in wheat fields overgrown to thistles and mustard (Tables 3, 4). Two of the three colonies nested a second time immediately following the first nesting effort. Nests were selectively placed in the densest patches of thistles and mustard. None were built in the patches of pure wheat between the thistle patches.

Rice associated colonies. Rice is an important foraging habitat for late nesting tricolors in the Sacramento Valley. Breeding in cattails or bulrushes adjacent to rice fields accounted for over 26.3% of all 2000 RE and over 34% of all RS. Most rice dependent colonies (86% of the individuals in 2000) range outward to forage for insects in rice fields. Cook (*pers. comm.*) noted the preference of tricolors for foraging in flooded and especially dry vernal pools. Figure 2 shows the foraging distance limits of one such colony on Tract 17, Delevan NWR. Tricolors at that colony also foraged on the refuge in dried vernal pools where insects, especially grasshoppers, were particularly conspicuous, but this part of the nestling provisioning effort accounted for less than 10% of all foraging time by that colony.

Bulrush nesting. At Maxwell II, nests in bulrushes were initially more successful than those in broadleaf cattails (*Typha latifolia*) in those in narrow leaf cattails (*T. angustifolia*) were the least successful. These differences were not analyzed further because their effect was eliminated by subsequent night heron predation. Bulrushes also accommodate heron, egret and ibis nesting. At two sites in Stanislaus and Merced counties, bulrush-nesting tricolor colonies not associated with night herons or ibises were highly successful. A large tricolor colony in bulrushes where no cattails were available in Riverside County was unsuccessful (<10% of nests fledged chicks) due to predation by Black-crowned Night-herons (*Nycticorax nycticorax*) and Great-tailed Grackles (*Quiscalus mexicanus*).

Observer effect. Comparison of RS of these nests with the marked and visited transect is a control estimating the effect of the observer upon the marked transect (summarized for previous years in Cook and Hamilton, ms.). No measurable effect was found, either in 2000 or in previous years (Cook and Hamilton, ms.). However, following entry into the George Dairy colony, Tulare County by the author and Richard DeHaven to evaluate the advisability of purchasing the colony and the crop, out trails through the exotic annual nettle (*Urtica urens*) and silage subsequently provided access for coyotes or dogs to prey upon nestlings. This result shows that coyote predation may be reduced by the presence of nettles.

Predation

Black-crowned Night-herons. Predation by Black-crowned Night-herons and raccoons (*Procyon lotor)* upon nests in cattail marshes and by Common Ravens (*Corvus corax*) and coyotes (*Canis latrans*) in upland and silage settings has in the past had catastrophic consequences for some colonies (Hamilton et al. 1995). However, some large cattail colonies were not heavily preyed upon by night herons in 2000. A high success rate was observed at two on Delevan NWR colonies (66% and 80% of all nest starts) and high RS in some cattail colonies was observed elsewhere (Table 3). This contrasts with recent (1993-1999) observations of wholesale tricolor nesting losses to night herons at most Central Valley cattail nesting sites including Delevan NWR in 1996 and 1997 and at several other sites in all previous years.

Ibis association. In 2000 I discovered that tricolors directly associated with ibises (*Plegadis chihi*) are protected from night heron predation. In some situations, as at Sutter NWR, Sutter County and the I-5 II colonies, tricolors stacked nests in bulrushes immediately below ibis nest platforms. In the same marshes, where both bulrushes and cattails were available, ibises sometimes used bulrushes exclusively (I-5 colony, 2000). Ibis also often use cattails for nesting platforms elsewhere.

Ten largest colonies

The record of the largest colonies since 1992 is summarized in Beedy and Hamilton (1997) for 1992, 1993, 1994 and 1997. The proportion of birds at the 10 largest colonies for the 2000 Census date (Table 7a, Figure 3) could be indicative of the thoroughness of our search. As the number of colonies located increases, the proportion of birds comprising the largest colonies might be expected to decrease, especially if the largest colonies are more likely to be detected. This proportion was 61.3% of all nesting birds at the time of the Census, lower than in previous years, suggesting that the 2000 search may have been particularly thorough.

Inclusion of a second list of the 10 largest colonies for the entire breeding season showed that over 58.9% of the *entire breeding season RE* was at the 10 largest colonies (Table 7b, Figure 4). When adjacent independent colonies within five miles of one another were combined into 10 *colony clusters* (Table 7c, Figure 5) they included an even greater proportion (76.2%) of all measured RE by tricolors for the season. One of several reasons colony clusters are so quantitatively important is that some of them produce two successive broods at the same location. Individuals losing nests can start again without losing time to travel and reconnaissance.

Discussion

Census analysis

Differences between years. Not all initial size estimates of colonies located during the Census can be adjusted by a post-season transect search to determine the number of active nests present during the breeding season. Refinement of initial estimates has been our convention in all years and, while it is a source for error in annual population estimates, it has been consistent. Part of the difference between 1999 and 2000 in number of birds found on the Census date could reflect a population increase resulting from protection by USFWS in 1999 of a large nesting colony (Producer's Dairy) in silage. But assuming that one-third of the fledglings produced there survived to breed the following year (Cook et al. 1993), fledglings from that colony would have added only about 9,000 individuals to the year 2000 breeding cohort (Table 5). The difference between 1999 and 2000 can more probably be explained by participation of DeHaven in the 2000 Census and by our failure to fully account for the fate of the large flock (75,000) observed (Hamilton et al. 1999) just prior to the 1999 Census in Tulare County.

Nonbreeding birds. There have been in all years of this study (1992-2000) relatively few nonbreeding birds (Appendix 2 for the Census date in 2000); most of them are flocks associated with colonies.

Habitat selection and habitat losses

Habitat selection. Tricolor colonies vary in size from 100 or even less (e.g., Clendennen, Kern County foothills) to as many as 105,000 individuals (1994, San Luis NWR) and in the past to as many as 300,000 individuals (Neff, 1937, Glenn County). Initial settlement at colony sites is into the most favorable situations. As settlement continues less favorable habitats are occupied. For example, dense thistles in wheat and silage fields attract first nesting individuals. Later starters may nest in thinner thistle patches or even in the wheat. Mapping hatching dates of nests throughout a colony identifies this relationship. First hatching nests are first settled. Males settling less favorable peripheral habitats may not attract females and subsequently may abandon their territories (Hamilton et al. 1995). This agrees with Collier's (1968) observation that far more individuals initiate than complete the nesting cycle at most or all colony sites, as observed again this year.

At some colonies all suitable nesting habitat is occupied (Hamilton et al. 1995). Elsewhere there is additional nesting habitat closely similar to that occupied which is unutilized (e.g., most, but not all, years at Laguna Seca, Monterey County). There are different densities of settlements in different years, especially at sites where all suitable habitat is utilized, such as at the Toledo Pit, Tulare County. So a local settlement exceeding the capacity of nesting habitat to accommodate it may accept low quality nesting substrate. Or some individuals may move on and settle elsewhere.

Habitat selection and water utilization. Tricolors select colony sites based upon their proximity to foraging areas. Nesting success depends, in part, upon the mean distance they must travel to provision chicks (Cook, Hamilton pers. obsn.). Tricolor colonies also depend upon open water within a short (< 500 m) distance from colony sites. Their need for water is low and can be satisfied by a small pond

and less than an acre-foot of water, by irrigation canals and even pools remaining late in the spring in seasonal streams. However, sites dependent upon flooding to protect nests or to support emergent aquatic vegetation, such as bulrushes and cattails, require open water for about four months and may require as much as three acre feet of water per acre per year. In California cattail marsh studies underway and completed suggest that cattails use less water than the reference comparison crop, healthy lawn or alfalfa. One cattail marsh in Ontario, Canada used 4.8 mm water/da, about 2 acre-feet/ 4 mo. season, not significantly different from shallow open pond water (4.9 mm/day). Thus, removal of cattails may not appreciably improve the water retention capacity of shallow water-filled reservoirs. This counterintuitive conclusion is due to a reduction of evaporative water losses by the cattail stand (Price 1994). Removal of cattail stands to enhance water capacity, as observed in Fresno, Yolo and Glenn counties and elsewhere may be unwarranted.

Reserve characteristics. Nesting sites must be associated with a nearby foraging space. In this year's rice study the foraging area supporting colonies on Delevan NWR included rice fields only up to 3.5 miles away. This area amounted to 10,000 ha or 25,000 acres per colony site (Figure 2). The amount of foraging habitat used within this space depends upon the resource and usually includes only a small part of the total area.

Other crops suitable for foraging tricolors near colonies include alfalfa and irrigated pasture, safflower, sunflowers and grains. Tricolors do occasionally forage in orchards, but not vineyards, and in most row crops (tomatoes, cotton, sugar beets, etc.), but they spend no substantial time doing so. Rangeland and oak-woodland are also important foraging habitats (East Park, Colusa County, Laguna Seca, Monterey County, Camanche Reservoir, San Joaquin County). All colonies require nearby water sources.

There is a vast additional potential to produce tricolor fledglings associated with rice if safe (free from night heron predation) nesting substrates can be provided. Mike Wolder, biologist at Sacramento NWR, Glenn County, advises development of parcels not smaller than 25-30 acres. A further modest buffer zone outside impoundments is desirable.

The colony on Tract 17 at Delevan NWR (Figure 2) was ideally situated to take advantage of nearby rice fields without being a major problem to rice growers. There are several reasons for the low impact of the Delevan colonies upon rice growers: 1) these colonies were not immediately adjacent to the utilized fields and thus their impact upon sprouting rice was spread over several growers, 2) the area was in production in all directions and there was a large amount of rice within reach of foraging tricolors and 3) the refuge provided some foraging habitat, supplementing tricolor resources and reducing the impact upon nearby rice. Elsewhere 40-acre parcels work well as nesting habitats. But parcels as small as two acres or even less can be significant producers of fledglings (Sunsweet, Yolo County 1998, 2000; San Luis Obispo County colony, 2000, 2/3 acre).

The most important foraging areas near dairies were alfalfa fields, irrigated pastures and grain associated with dairying operations. Adult tricolors in this setting also make extensive use of wheat and barley in the milk stage and dairy cow rations, especially cracked corn (Skorupa et al. 1980, Hamilton et al. 1995), imposing moderate losses upon dairymen.

Colony clusters. Once having identified the concept of colony clusters (above) I searched for them not only on the ground but also in the recent historical record. They were not difficult to find. The colony cluster in the vicinity of the Capitol Outing Club, Colusa County, followed by Orians (1961) in the late 50s, remains active (Table 7). Himalaya blackberries supporting a vast rice-foraging tricolor settlement east of Willows, California, were deliberately destroyed in 1998. In Sacramento County the colony cluster at Ranch Seco was lost to deliberate destruction of nesting habitat and to a huge vineyard. In Kings County during the 1990s the tricolor megalopolis near I-5 was lost to almonds, barley and cotton. The historical (1959) marsh colony at Madison, Yolo County (>100,000, Orians 1961) was lost to drainage. Neff (1937 reported several colony clusters, mostly in marshes in the midst of the rice growing districts of the Sacramento Valley that no longer exist.

Deliberate habitat destruction. Deliberate habitat loss, sometimes associated with tricolor observer actions, both by Census observers and the author, is a major problem. Since there has been a trend towards nesting in introduced plants (DeHaven 1975, Cook 1996, Hamilton and Beedy 1997, 1999) it will be difficult to rationalize their protection. As agriculture continues to intensify, patches of Himalaya blackberries are steadily being lost to potent herbicides and burning. A biodiversity-based justification for long-term maintenance of Himalaya blackberries (Hamilton et al. 1999) and giant cane (*Arundo*, DeHaven 2000) is not a viable long-term solution to the tricolor decline problem.

Urbanization. Protection of spectacular small colonies in the midst of cities, especially in Southern California but also at Laguna Seca (Monterey County) and elsewhere by easements or outright purchase is an urgent priority.

Predation changes. The distribution and abundance of ibis in California is expanding, from 800 in 1990 to 5,134 in 1999 (Ivey et al. 2000). Resurgence of ibis may change the long-term value of cattail marshes for tricolors and offers one answer to the question of how tricolors dealt with night herons in the past.

Management Actions and Their Outcome

Population increases depend upon habitat enhancement and protection. Since suitable nesting and foraging habitats have entirely different characteristics, improvement of conditions for either may produce a successful colony where there was none, as observed in 2000 and in other years at several locations.

Wind Wolves Conservancy. At Wind Wolves (western Kern County), following fence building to exclude cattle from foothill springs, the number of birds using nettles and cattails there increased from 740 in 1999 to 3,660 in 2000. Tricolors, unlike redwings, are well suited to exploitation of open, unirrigated rangeland. End of season observation showed high RS (as measured only by attendance of large flocks provisioning flighted fledglings) is a harbinger of further population increases. The limits to production in such safe foothill colonies has not been determined but has the potential to increase overall tricolor abundance while generating positive benefits in rangelands by controlling herbivorous insects, especially grasshoppers. The privately funded initiative at Wind Wolves identifies

a major opportunity to enhance tricolor numbers in rangeland habitats. Foothill and valley margins colonies also have escaped night heron predation (e.g., Sunsweet, Table 3).

Refuge nesting in goose habitat. At Merced NWR three colonies settled in weedy wheat. There thistles flourished in wheat fields planted to attract geese. A large proportion (>80%) of tricolor nests in these thistles succeeded. Both of the colonies monitored also successfully renested (Table 3, 4). This is at a site where there has been little successful tricolor nesting during the 1990s. A secure nesting substrate was the missing ingredient.

Other management actions on NWRs. At Sacramento, Delevan, Merced and Kern NWRs pools with cattails continue to be managed for tricolors. In comparison with 1994 observations an increasing proportion of the entire RE in 2000 was on wildlife refuges. Colusa NWR (Colusa County), once a tricolor nesting site, at present maintains no suitable tricolor nesting habitat.

Populations

Connectivity (Merriam 1991), i.e. movement between colony sites in California north of the Tehachapis may be nearly complete (DeHaven et al. 1975, Hamilton 1998). A success or loss anywhere may be a contribution to, or subtraction from the whole Central Valley population and, if tricolors move freely between Northern and Southern California, the global tricolor population. Local between year changes in presence of tricolors (Table 6) can be related to changes in local conditions. Earlier authors, incompletely informed about the causes of year-to-year changes in conditions, felt these changes were illogical and without apparent cause (a conclusion summarized in Beedy and Hamilton 1999). Payne (1969) evaluated proximate causes of year-to-year changes in settlement patterns. He and Collier (1968) evaluated the role of burning of cattail marshes and the delay or elimination of initiation of breeding caused by it. Collier (1968) showed that the drying of ponds caused local colonies to shift their location and noted that specific marsh conditions influenced changes in settlement and numbers. Most of the year-to-year changes (Table 6) have logical explanations, derived from my diachronic observations. Some of them are given in Appendix 7. Site by site, the causes of loss of colony sites and their associated foraging habitats are known. Causes of tricolor declines in abundance are also known and remedies are equally apparent.

The main utility of Table 4 is to show the relative importance of alternative habitats and the management strategies they suggest. Substitution of alternative estimates will change the results (Table 5). For example, if survivorship of adults is 70% rather than 50% there will be 33,000 more adults in 2001. But these adjustments will not change the relative importance of particular colonies; relative importance of colonies will change only if the global population was underestimated. Available data suggest that a viable management strategy is to work with known colony sites and already identified habitats. Search for and evaluation of habitat without these leads (DeHaven 2000), a potentially useful long-term strategy, will be neither cost effective nor timely.

Hamilton (1998) evaluated patterns of irregular within-breeding-season movements by tricolors. His study, based upon the annual censuses and surveys, showed that

tricolors are breeding at more than one place during the breeding season, i.e., that they are itinerant breeders. When tricolors have not yet arrived at a site an observer finding no colonies may erroneously conclude that there are no birds using a particular locality or region that year (Hosea 1984, Beedy et al. 1991, DeHaven 2000 for Colusa County).

Colonies also can be overlooked if visits to colony sites are infrequent. At one site (Capitol Outing Club) in 1994, 60,000 tricolors arrived and initiated breeding between June 1 and June 4. Their nests were entirely emptied by night heron predation by June 17. Observations there on all dates before June 1 and after June 17 would have produced no observations of tricolors. To avoid missing birds during the breeding season local searches must persistently observe colony sites throughout the season, an activity best pursued by local residents.

Further Work and Recommendations

There is a wide range of possible ways that tricolor distribution and abundance are affected (see especially Hamilton 1998). These have been largely unevaluated. The extensive and complex literature dealing with population fluctuations has as yet not been brought to bear on the tricolor population evaluation and management problem. One achievement of ongoing tricolor studies is identification of a set of actions (Beedy and Hamilton 1997, Hamilton et al., 1999, this report) that, when implemented in specific places, will promptly reverse the striking decline in tricolor numbers noted here and reported elsewhere.

Future Censuses and surveys. In 1994, 1997, 1999 and 2000 we searched for colonies with as many people as possible, as thoroughly as possible on a specific date. This Census depends upon participants to locate and estimate the size of colonies. Serious amateur and professional birders (Appendix 8) located most of all birds recorded. Future censuses and surveys should emphasize participation by these highly motivated and knowledgeable individuals. An expanded list of people contacted and who contacted us but filed no written or verbal report is also available. Censuses in the past two years were done on short notice. There is competition for the time of those individuals most qualified to make field evaluations of tricolor distribution and abundance in late April when the censuses are conducted. A season long search for colonies would not depend upon recruiting of these individuals on a particular weekend. I recommend that a season-long survey be conducted in 2001 to more effectively identify all colonies and to avoid overemphasis upon the San Joaquin Valley colonies active on the traditional dates of the Census. What is the best method for attaining maximum coverage?

Any census should be planned well in advance and an intensive search for colonies initiated by mid-March. Early season observers need to be in the field by 20 March when the silage-nesting season begins. Much of the work developing estimates of colony size and almost all of the RS estimates were made after the Census was completed. Some colonies forming before or after the Census were not located or were reported and not quantified. These essential activities are personnel and cost limited. Resources throughout the 1990s, with the exception of 1994, were inadequate to exploit the opportunity to evaluate the fate of colonies which in all years has depended heavily upon volunteer labor. To quantitatively track this

species we need one or two full-time experienced field workers and a full-time communications and records keeper working at least six months.

Contacting landowners and convincing them to accept observers is a time consuming process and requires a skillful person willing to work with diverse people and organizations. Censuses and surveys are sensitive and have resulted in the loss of colonies to deliberate destruction by landowners. Further work needs to consider ways to minimize this effect.

Night heron predation. Unlike all recent years (since 1991) Black-crowned Night-heron predation was low or absent at some cattail colonies. Hence I withdraw my support for our (Hamilton et al. 1999) recommendation that additional large cattail expanses to accommodate tricolor breeding be avoided. This conclusion notwithstanding, most tricolor nesting in cattails failed at Kern NWR, Kern County, probably due to night heron predation. Night herons were observed destroying the Maxwell I and Maxwell II colonies (Colusa County). A quantitative measure of night heron and ibis distribution and abundance is needed. It should be compared with earlier heron censuses conducted by CDFG. These old records need to be recovered and extended.

Rice. Tricolors are at present heavily dependent upon rice (Table 4), the successor to the great Sacramento Valley wetlands. In 2000 RS at most nests in rice habitats was lower (by about 20%) than in other (1991-1999) seasons (Table 3). A recent analysis of riparian birds in California (RHJV, 2000) states that pesticides are a factor in tricolor decline. I know of no evidence that toxic contaminants have adversely affected this species since Beedy and Hayworth's (1992) report of selenium poisoning associated with the Kesterson affair. The possible impact of recent changes in pest insect control upon tricolor reproduction in rice needs evaluation. A study of the environmental relationships of tricolors depending upon rice is a high priority. For an evaluation of use and management of rice for waterbirds in Europe see Fasola and Ruiz (1997).

Silage. The scale of operations necessary to implement a policy of protecting colonies in silage by USFWS should not be underestimated. It may not be evident from this and previous reports that censuses in late April were conducted during the breeding season well after several silage colonies already were lost. Some silage colony losses scatter large colonies, reducing the potential to accurately estimate numbers of colonies and breeding birds. If USFWS plans to implement a policy of protecting all tricolor colonies in silage habitats, regardless of planned actions, the plan needs to be established before the 2001 tricolor breeding season.

Access. Another issue to be considered relative to tricolor management if silage colonies are going to be managed is access to private property. One 1994 Tulare County silage colony (50,000 birds) nesting on private property could only be accessed by travelling about three miles on private roads. That year USFWS personnel were unable to do so. The colony was wiped out during harvest. Elsewhere we have relied on the goodwill of landowners for access to colonies. How is this problem going to be resolved?

Are buyouts meaningful to tricolor populations? There are several reasons to buy out or otherwise protect at-risk colonies on private property. These include; (1)

silage fields produce tricolors, a declining and possibly jeopardized species, supplementing their numbers relatively inexpensively, (2) there are ethical objections to destroying colonies of birds and (3) we should a be observing the Migratory Bird Treaty Act.

Discussion above suggests that tricolor abundance is a matter of adding to and subtracting from a pool of individuals comprising the population. This kind of calculation is especially meaningful when populations are suppressed by catastrophic events such as DDT poisoning, excessive hunting, collecting and other exotic human forces. Is silage cutting such a factor? Between 1992 and 1994, in 1999 and 2000 we (CDFG, USFWS, Hamilton, Producers Dairy) protected several colonies, substantially reducing silage breeding colony losses. Nevertheless the decline continued (Table 5). Perhaps tricolor population decline is the outcome of habitat loss and largely independent from fledgling losses. Was the Passenger Pigeon (*Ectopistes migratorius*) hunted to extinction or the victim of massive habitat changes (Butcher 1992)?

Population changes and within-season movements. The plausible suggestion by DeHaven (2000) that losses of large colonies in the silage fields may have no population meaning seems to be refuted by his classical studies (DeHaven et al. 1975) which showed that tricolor philopatry is limited. Tricolors fledged at any particular colony are more likely to be found somewhere else the following year than at their natal colony site when they initiate nesting. It seems to follow that successful colonies may contribute to or draw upon breeding stock elsewhere, either as colonists or as additions to active colonies. It should also follow that those persistent failures at particular colony sites use reproductive effort (RE), depleting the entire population. In response to these arguments DeHaven (pers. comm.) notes that while natal philopatry is limited, 2-year-old and older tricolors may be more highly philopatric to their sites of initial breeding settlement, a relationship not tested by any available data and certainly a possibility. Itinerant breeding (Hamilton 1998) demonstrates the interdependence of tricolor colonies throughout the Central Valley and possibly the tricolor world. To what extent are the respective colonies in the Central Valley drawing upon or contributing to one another? Are there major sources (of production of fledglings) and sinks (habitats yielding unsuccessful reproduction, Pulliam 1988, Hamilton et al. 1995)? Many details of tricolor life history are unresolved and knowledge of them is crucial to an informed evaluation of the causes of tricolor population decline.

Conclusion

Tricolored Blackbirds deserve to be given a higher priority in conservation affairs than they have so far been given. In a recent USGS announcement of support for species at risk (SAR), over 40 species of birds were listed as eligible for funding. Tricolored Blackbirds were not included. In a review of avian diversity and conservation priorities, Owens and Bennett (2000) evaluated phenotypic diversity. The phenotypic diversity component of the North American avifauna represented by tricolors is huge. Tricolors are now the most highly colonial land bird in North America, a place they took in 1914 when the Passenger Pigeon became extinct. Massed colonies are a part of tricolor and avian diversity, and that aspect of their diversity continues to erode.

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Bob Barnes, California Audubon, organized the Census, recruiting not only participants but also enthusiasm for the species and its protection.

The participants in the Census are listed in Appendix 8. Their reports included much of importance in addition to the reports of observations of tricolor at and away from colonies. Appendix 8 lists only those who contributed written accounts to the Census. Listing of all those who dutifully searched for and reported colonies is not possible but their support is deeply appreciated.

Sam Fitton and Richard DeHaven made particularly extensive travels in the San Joaquin Valley to make the Census as complete as possible.

Liz Cook contributed data not only from 2000 but also previous years. Without her extensive knowledge of the tricolor issue in Sacramento County a far less complete report would be possible.

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David Clendennen precisely tracked tricolor and other events in nature on the Wind Wolves reserve.

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Investigation effort summary for Tricolored Blackbird Survey years

INVESTIGATION SITES	N SITES ON APRIL 21-24				N COUNTIES			
	1994	1997	1999	2000	1994	1997	1999	2000
SURVEY BREEDING COLONIES	80	71	53	72	26	25	22	24
COLONY SITES NO BIRDS PRESENT	94	43	114	134	18	15	19	26
TOTAL	174	114	167	206	33	29	29	33
TOTAL BREEDING COLONIES ALL DATES	99	79	89	98	28	28	26	25
TOTAL COUNTIES SURVEYED					37	34	32	33
SURVEY PARTICIPANTS REPORTING	68	55	50	81				

SURVEY SUMMARY, NUMBER OF BIRDS:	1994	1997	1999	2000
BREEDING BIRDS *1	300,000	185,000	85,000	105,481
BREEDING BIRDS **2	330,000	230,000	95,000	155,000

*1 Breeding birds as of late April; observers Bill Hamilton, Liz Cook, Bakersfield observers, Sam Fitton, Tim Manolis. Scope is Central Valley plus eastern Riverside County. Latter done by Hamilton, local collaborators. Figures rounded to nearest 5,000.

**2 Breeding birds as above plus all reports by other observers throughout the geographic distribution of the species as of late April. Rounded to

TABLE 2

ANNUAL SURVEY COMPARISON

Region and County	1994 Breeding	1994 Nonbreeding	1994 Total	1997 Breeding	1997 Nonbreeding	1997 Total
SACRAMENTO VALLEY						
BUTTE	0	0	0	0	0	0
COLUSA	25	2	27	2,100	1,975	4,075
EL DORADO	0	0	0	0	0	0
GLENN	2,000	0	2,000	0	0	0
PLACER	1,000	0	1,000	430	228	658
SACRAMENTO	93,225	803	94,028	25,850	5,658	31,508
SUTTER	35	200	235	0	0	0
TEHAMA	0	0	0	35	0	35
YOLO	400	75	475	200	0	200
YUBA	0	597	597	0	950	950
SUBTOTAL	**96,685**	**1,677**	**98,362**	**28,615**	**8,811**	**37,426**
SAN JOAQUIN VALLEY						
CALAVERAS	0	0	0	8,253	60	8,313
FRESNO	21,150	0	21,150	2,500	6,050	8,550
KERN	70,600	1,655	72,255	16,850	50	16,900
KINGS	0	10,000	10,000	33,300	0	33,300
MERCED	60,100	19,000	79,100	13,000	0	13,000
SAN JOAQUIN	13,750	2,228	15,978	11,750	107	11,857
STANISLAUS	2,500	1,428	3,928	150	0	150
TULARE	50,000	0	50,000	53,500	2,000	55,500
SUBTOTAL	**218,100**	**34,311**	**252,411**	**139,303**	**8,267**	**147,570**
SAN FRANCISCO BAY DELTA						
ALAMEDA	20	4	24	1,265	0	1,265
CONTRA COSTA	400	0	400	0	0	0
MARIN	0	400	400	0	0	0
NAPA	11	0	11	350	50	400
SANTA CLARA	3,350	150	3,500	550	0	550
SOLANO	0	5	5	37	1	38
SUBTOTAL	**3,781**	**559**	**4,340**	**2,202**	**51**	**2,253**
NORTH COAST						
HUMBOLDT	100	0	100	0	0	0
LAKE	0	0	0	0	60	60
MENDOCINO	0	0	0	12	0	12
SONOMA	0	30	30	0	0	0
SUBTOTAL	**100**	**30**	**130**	**12**	**60**	**72**
CENTRAL COAST						
MONTEREY	2,200	20	2,220	5,500	400	5,900
SAN BENITO	0	0	0	460	778	1,238
SAN LUIS OBISPO	0	0	0	660	0	660
SANTA BARBARA	2,000	0	2,000	0	0	0
SANTA CRUZ	0	0	0	0	0	0
SUBTOTAL	**4,200**	**20**	**4,220**	**6,620**	**1,178**	**7,798**
SOUTHERN CALIFORNIA						
LOS ANGELES	755	60	815	430	0	430
ORANGE	1,000	34	1,034	231	0	231
RIVERSIDE	2,100	75	2,175	37,956	400	38,356
SAN BERNARDINO	0	0	0	300	0	300
SAN DIEGO	2,000	0	2,000	3,178	58	3,236
TUOLUMNE	0	0	0	0	0	0
VENTURA	90	0	90	0	0	0
SUBTOTAL	**5,945**	**169**	**6,114**	**42,095**	**458**	**42,553**
NORTHEAST INTERIOR						
LASSEN	0	0	0	0	6	6
MODOC	0	250	250	0	0	0
SHASTA	2,500	85	2,585	0	0	0
SISKIYOU	400	547	947	250	0	250
SUBTOTAL	**2,900**	**882**	**3,782**	**250**	**6**	**256**
TOTAL	**331,711**	**37,648**		**219,097**	**18,831**	
GRAND TOTAL			**369,359**			**237,928**
CALIFORNIA CO WITH BIRDS	**32**				**30**	

TABLE 2

ANNUAL SURVEY COMPARISON

Region and County	1999 Breeding	1999 Nonbreeding	1999 Total	2000 Breeding	2000 Nonbreeding	2000 Total
SACRAMENTO VALLEY						
BUTTE	5,000	958	5,958	5,035	399	5,434
COLUSA	1,000	31	1,031	2,500	0	2,500
EL DORADO	0	0	0	0	0	0
GLENN	0	0	0	0	0	0
PLACER	2,000	2,500	4,500	6,200	0	6,200
SACRAMENTO	12,859	0	12,859	12,275	4,108	16,383
SUTTER	200	200	400	200	0	200
TEHAMA	0	0	0	0	0	0
YOLO	0	0	0	80	0	80
YUBA	0	0	0	0	0	0
SUBTOTAL	**21,059**	**3,689**	**24,748**	**26,290**	**4,507**	**30,797**
SAN JOAQUIN VALLEY						
CALAVERAS	0	0	0	260	500	760
FRESNO	39,790	250	40,040	5,046	15	5,061
KERN	3,350	0	3,350	10,600	50	10,650
KINGS	0	0	0	10,000	0	10,000
MERCED	1,500	2,461	3,961	25,980	1,120	27,100
SAN JOAQUIN	0	0	0	7,008	65	7,073
STANISLAUS	3,000	1,126	4,126	0	15	15
TULARE	14,000	0	14,000	53,300	0	53,300
SUBTOTAL	**61,640**	**3,837**	**65,477**	**112,194**	**1,765**	**113,959**
SAN FRANCISCO BAY DELTA						
ALAMEDA	4,000	0	4,000	0	0	0
CONTRA COSTA	0	0	0	0	0	0
MARIN	0	0	0	0	0	0
NAPA	640	40	680	104	0	104
SANTA CLARA	0	0	0	0	0	0
SOLANO		33	33	0	0	0
SUBTOTAL	**4,640**	**73**	**4,713**	**104**	**0**	**104**
NORTH COAST						
HUMBOLDT	0	0	0	0	0	0
LAKE	0	0	0	0	0	0
MENDOCINO	15	0	15	0	0	0
SONOMA	0	0	0	0	0	0
SUBTOTAL	**15**	**0**	**15**	**0**	**0**	**0**
CENTRAL COAST						
MONTEREY	2,430	6	2,436	955	63	1,018
SAN BENITO		160	160	702	718	1,420
SAN LUIS OBISPO	261	250	511	500	500	1,000
SANTA BARBARA	0	0	0	0	0	0
SANTA CRUZ	300	0	300	200	0	200
SUBTOTAL	**2,991**	**416**	**3,407**	**2,357**	**1,281**	**3,638**
SOUTHERN CALIFORNIA						
LOS ANGELES	520	605	1,125	510	100	610
ORANGE	100	6	106	490	5	495
RIVERSIDE	3,000	1,000	4,000	10,000	0	10,000
SAN BERNARDINO	1,000	0	1,000	0	0	0
SAN DIEGO	160	35	195	1,310	711	2,021
TUOLUMNE	0	0	0	400	175	575
VENTURA	0	0	0	0	0	0
SUBTOTAL	**4,780**	**1,646**	**6,426**	**12,710**	**991**	**13,701**
NORTHEAST INTERIOR						
LASSEN	0	0	0	300	9	309
MODOC	0	0	0	0	0	0
SHASTA	0	0	0	0	0	0
SISKIYOU	0	0	0	0	0	0
SUBTOTAL	**0**	**0**	**0**	**300**	**9**	**309**
TOTAL	**95,125**	**9,661**		**153,955**	**8,553**	
GRAND TOTAL			**104,786**			**162,508**
CALIFORNIA CO WITH BIRDS		**23**			**25**	

TABLE 3
REPRODUCTIVE SUCCESS IN 2000

Colony (Foraging Habitat)	Substrate	Date	N nests	succ nests	% succ	RS Succ	RS All	Colony Size	Fledge	Predation	Ibis
COLUSA											
DELEVAN 17 (RICE)	CATTAIL	6/17/00	35	28	80	1.5	1.20	25,000	20,000	NO	NO
DELEVAN 42 (RICE)	CATTAIL	6/10/00	29	19	66	2.7	1.80	12,000	14,000	NO	NO
HILLS (RICE)	CATTAIL	6/23/00 6/27/00	36	24 18	67	1.6 1.6	1.20	25,000	20,000	NO	
ACRE FARMS (RICE)	CATTAIL	6/13/00	39	6	15	1.6	0.50	10,000	3,333	HERON	NO
I-5 MAXWELL I (RICE)	CATTAIL	7/1/00	22	5	23	1.6	0.40	5,000	1,199	HERON	YES
I-5 MAXWELL II (RICE)	CATTAIL / BULRUSH	7/9/00	71	2	3	2.0	0.03	2,000	38	HERON	YES
HARBISON RD (CATTAIL)		7/1/00		0	0	0.0	0.00	7,500	0	HERON	NO
MERCED											
MERCED NWR # 3 (RANGELAND)	THISTLE	5/25/00	22	18	82	1.4	1.12	18,000	13,440	NO	NO
MERCED NWR # 5 (RANGELAND)	THISTLE	6/3/00	5	4	80	1.0	0.80	11,000	8,800	NO	NO
ARENA PLAINS (RANGELAND)	H.BLKBERRY	5/13/00	36	18	50	1.9	0.95	8,500	5,666	NO	NO
RIVERSIDE											
HEMET	BULRUSH	4/7/00 5/12/00	6 44	2	4	1.8 1.5	0.20 0.10	10,000 10,000	1,333 454	HERON / GRACKLE	YES
SUTTER											
SUTTER NWR (RICE)	CATTAIL / BULRUSH	8/2/00	108	7	6	1.4	0.10	7,500	500	HERON	YES
TULARE											
TE VELDE (ALFALFA)	SILAGE	5/3/00 5/6/00	33 91	24 44	73 48	1.4 1.5	1.00 0.70	30,000 30,000	20,000 14,000	COYOTE	NO
TOLEDO PIT (ALFALFA)	CATTAIL	4/16/00	36	16	44	1.6	0.70	15,000	7,000	NONE	NO
YOLO											
SUNSWEET I (RICE)	CATTAIL	4/17/00	20	0	0	0.0		200	0	UNK	NO
SUNSWEET II (RICE)	CATTAIL	6/1/00		10		2.1		2,000	2,800	NO	NO

X WEIGHTED RS / NEST OF MEASURED COLONIES EXCLUDING LOST SILAGE COLONIES 0.87
X UNWEIGHTED RS / NEST OF MEASURED COLONIES INCLUDING LOST SILAGE COLONIES 0.81

TABLE 4

REPRODUCTIVE EFFORT SUMMARY FOR BREEDING COLONIES

Colony	Ownership nesting	Ownership foraging	Foraging Substrate	Si D	Nesting Substrate	S U	Reproductive effort	Colony Size (Adults)	Fledglings	Fledglings per
Population use of time for each colony, Time lost to successful nests (S) appears above lost nests (U) Silage (Si) Grain (G) Dairy (D) Privte (PVT) Public (PUB) Government (GOV)										
RICE DEPENDENT FORAGING										
DELEVAN 17:	GOV	PVT/PUB	RICE		CATTAIL	S U	8.2% 0.8%	25,000	20,000	1.20
DELEVAN 42:	GOV	PVT	RICE		CATTAIL	S U	3.3% 0.6%	12,000	14,000	1.75
HILLS RICE:	PVT	PVT	RICE		CATTAIL/ BULLRUSH	S U	6.9% 1.3%	25,000	20,000	1.20
ACRE FARMS:	PVT	PVT	RICE		CATTAIL	S U	0.6% 1.3%	10,000	3,333	0.50
MAXWELL I:	GOV	PVT	RICE		CATTAIL	S U	0.5% 0.6%	5,000	1,200	0.36
MAXWELL II:	GOV	PVT	RICE		WILD RICE	S U	TRACE 0.3%	2,000	38	0.02
SUNSWEET:	PVT	PVT	RICE		CATTAIL	S	0.7%	2,000	1,919	1.44
SUTTER WILD RICE:	PVT	PVT	RICE		CATTAIL	S U	3.7% 0.5%			
SUTTER NWR:	GOV	PVT	RICE		CATTAIL/ BULLRUSH	S U	0.2% 0.7%	7,500	500	0.10
HARBISON	PVT	PVT	RICE		CATTAIL	U	0.3%	7,500	0	0.00
TOTAL ALL RICE							**30.5%**			
ALFALFA FORAGING (=DAIRY DEPENDENT) COLONIES										
FAILED SILAGE			ALFALFA	Si /D	CUT FEED	U	4.1%	20,000	0	0.00
TE VELDE:	PVT	PVT	ALFALFA	Si /D	WHEAT (TRITICALE)	S U	7.4% 3.9%	30,000	17,000	0.85
GEORGE DAIRY:	PVT	PVT	ALFALFA	Si /D	WHEAT/ NETTLES	S U	2.3% 0.6%	7,500	4,500	0.90
TOLEDO PIT:	PUB	PVT	ALFALFA	D	CATTAILS	S U	2.4% 3.8%	21,000	10,266	0.70
HEMET:	PUB	PVT	ALFALFA	D	BULRUSH	S U	0.3% 4.0%	20,000	1,000	0.05
TOTAL ALL							**28.8%**			
MERCED COUNTY COLONIES, RANGELAND FORAGING										
MERCED NWR 3:	GOV	PVT/GOV	RANGE	Si /D	THISTLE	S U	6.1% 0.7%	18,000	13,440	1.12
MERCED NWR 5:	GOV	PVT/GOV	RANGE	Si /D	THISTLE	S U	3.6% 0.5%	11,000	8,800	1.20
ARENA PLAINS:	PUB	PVT	RANGE		H. BLACKBERRY	S U	1.3% 0.9%	8,500	5,666	1.00
MERCED NWR NORTH:	PUB	PVT/GOV	RANGE	Si /D	WHEAT		0.8%	2,000		
TOTAL MEASURED MERCED:							**14.3%**			

TABLE 4

REPRODUCTIVE EFFORT SUMMARY FOR BREEDING COLONIES

Colony	Ownership nesting	Ownership foraging	Foraging Substrate	Si D	Nesting Substrate	S U	Reproductive effort	Colony Size (Adults)	Fledglings	Fledglings per
The following were not measured and are estimated based upon same year and other year measurements in similar habitats elsewhere.										
KERN NWR RENEST	GOV	PVT	?		CATTAIL		0.7%	2,000		
STANISLAUS SLOUGH:	?	PVT	ALFALFA		BULRUSH		4.6%	15,000		
OTHER BULRUSH	MIX	MIX	MIXED		BULRUSH		2.8%	9,139		
BLACKBERRY	MIX	MIX			H. BLACKBERRY		8.0%	25,192		
CATTAIL	MIX	MIX	MIXED		CATTAIL		3.0%	9,957		
TAMARISK	PVT	PVT	MIXED		TAMARISK		0.6%	2,000		
WIND WOLVES NETTLE/ CATTAIL)	PVT	PVT	RANGE		NETTLE		1.1%	3,660		
OTHER WILLOW	PVT	PVT	MIXED		MIXED/ WILLOW		0.2%	767		
TOTAL ESTIMATED AS NOT MEASURED							**21.0%**	**67,715**		
UNACCOUNTED FOR NESTING							5.4%			
GRAND TOTAL							**100.0%**			

TABLE 5

DEMOGRAPHIC CONSEQUENCES OF INTERVENTION

COLONY SAVED	N	RS	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1991 SAN ANTONIO (AL)	3,500		777	389	194	97	49	25	13	7	4	2
1992 LETTUCE (KI)	65,000	2.5		36,111	18,056	9,028	4,514	2,257	1,129	565	283	142
1992 LETTUCE (KI)	15,000	2.2			7,333	3,667	1,834	917	459	230	115	58
1993 TULARE (TU)	48,000	1.0			10,666	5,333	2,667	1,334	667	334	167	84
1994 WILDWOOD (KE)	28,000	1.5				9,333	4,667	2,333	1,167	584	292	146
1994 PRODUCERS (FR)	28,000	1.8				8,000	4,000	2,000	1,000	500	250	125
1994 SAN LUIS (ME)	105,000	0.7				15,633	7,817	3,909	1,955	978	489	245
1999 PRODUCERS (FR)	45,000	0.9									9,000	4,500
2000 TE VELDE (TU)	30,000	0.85										5,667
2000 GEORGE DAIRY (TU)	7,500	0.85										1,417
Total difference in breeding adults			**777**	**36,500**	**36,249**	**51,091**	**25,545**	**12,723**	**6,390**	**3,198**	**10,600**	**12,386**

The same estimates with 70% rather than 50% annual adult survivorship are:

COLONY SAVED	N	RS	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1991 SAN ANTONIO (AL)	3,500		777	544	581	267	187	131	92	64	45	9
1992 LETTUCE (KI)	65,000	2.5		36,111	25,278	17,685	12,379	8,666	6,066	4,246	2,972	2,081
1992 LETTUCE (KI)	15,000	2.2			7,333	5,133	3,593	2,515	1,761	1,232	863	604
1993 TULARE (TU)	48,000	1.0			10,666	7,466	3,262	2,283	1,598	1,119	783	548
1994 WILDWOOD (KE)	28,000	1.5				9,333	6,533	4,573	3,201	2,241	1,569	1,098
1994 PRODUCERS (FR)	28,000	1.8				8,000	5,600	3,920	2,744	1,921	1,345	941
1994 SAN LUIS (ME)	105,000	0.7				15,633	10,943	7,660	5,362	3,753	2,627	1,839
1999 PRODUCERS (FR)	45,000	0.9									9,000	6,300
2000 TE VELDE (TU)	30,000	0.85										5,667
2000 GEORGE DAIRY (TU)	7,500	0.85										1,417
Total difference in breeding adults			**777**	**36,655**	**43,858**	**63,527**	**44,469**	**31,128**	**20,824**	**14,576**	**19,204**	**20,504**

Same, but Reproductive Effort saved subtracted to account for breeding elsewhere, 50% annual survivorship:

COLONY SAVED	N	RS	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1991 SAN ANTONIO (AL)	3,500		388	194	97	48	24	12	6	3	2	1
1992 LETTUCE (KI)	65,000	2.5		18,055	9,027	4,513	2,257	1,129	565	283	142	71
1992 LETTUCE (KI)	15,000	2.2			3,666	1,833	915	457	229	114	57	29
1993 TULARE (TU)	48,000	1.0			5,333	2,666	1,333	667	334	167	84	42
1994 WILDWOOD (KE)	28,000	1.5				4,666	2,333	1,167	584	292	146	73
1994 PRODUCERS (FR)	28,000	1.8				4,000	2,000	1,000	500	250	125	63
1994 SAN LUIS (ME)	105,000	0.7				7,817	3,909	1,955	978	489	245	123
1999 PRODUCERS (FR)	45,000	0.9									4,500	2,250
2000 TE VELDE (TU)	30,000	0.85										2,834
2000 GEORGE DAIRY (TU)	7,500	0.85										709
Total difference in breeding adults			**388**	**18,249**	**18,123**	**25,543**	**12,772**	**6,386**	**3,196**	**1,598**	**5,301**	**6,195**

Same, but Reproductive Effort saved included, 70% annual survivorship:

COLONY SAVED	N	RS	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
1991 SAN ANTONIO (AL)	3,500		388	272	190	133	93	65	46	32	22	31
1992 LETTUCE (KI)	65,000	2.5		18,055	12,638	8,847	6,193	4,335	3,034	2,124	1,187	1,041
1992 LETTUCE (KI)	15,000	2.2			3,666	2,566	1,796	1,257	880	616	431	302
1993 TULARE (TU)	48,000	1.0			5,333	3,733	2,331	1,632	1,142	800	560	392
1994 WILDWOOD (KE)	28,000	1.5				4,666	3,266	2,286	1,600	1,120	784	549
1994 PRODUCERS (FR)	28,000	1.8				4,000	2,800	1,960	1,372	960	762	471
1994 SAN LUIS (ME)	105,000	0.7				7,816	5,471	3,830	2,681	1,877	1,314	920
1999 PRODUCERS (FR)	45,000	0.9									4,500	3,150
2000 TE VELDE (TU)	30,000	0.85										2,834
2000 GEORGE DAIRY (TU)	7,500	0.85										709
Total difference in breeding adults			**388**	**18,327**	**21,827**	**31,761**	**23,633**	**16,542**	**10,755**	**7,529**	**9,560**	**10,399**

2000 TRICOLOR BLACKBIRD SURVEY
TABLE 6
ANNUAL COMPARISON OF SELECTED HABITATS

Change in 2000 from previous surveys in number of tricolors found in specific habitats, places or regions. Totals include renesting. Some birds are thus counted more than once. Totals may exceed the world population. Numbers are rounded to nearest 5,000.

SITES	2000	1999	1998	1997	1996	1995	1994	1993	1992
APRIL SURVEY TOTAL	**162,000**	**110,000**		**240,000**			**350,000**	**inc.**	**inc.**
SACRAMENTO VALLEY									
DELEVAN NWR #42	**12,000	2,000		12,000			12,000	9,000	0
SACRAMENTO CO.	12,000	13,000		32,000			110,000	**inc.**	84,000
SUNSWEET, YOLO CO.	2,040	•		0			**X**	**X**	**X**
CHAMBERLAIN, YOLO CO.	**X**	**X**		0			0	1,000	800
CAPITOL OUTING, COLUSA CO.	31,000	6,000		80,000			60,000	5,000	60,000
SAN JOAQUIN VALLEY									
MERCED CO.	26,000	1,500		13,000			112,000	20,000	79,000
PRODUCERS DAIRY, FRESNO CO.	0	37,500		5,500			20,000	?	?
SILAGE, GRAIN, SAN JAOQUIN VALLE	60,500	14,000		2,500			118,000	*48,000	*50,000
TOLEDO PIT, TULARE CO.	21,000	•		51,000			50,000	unk.	?
KERN NWR	7,500	2,000		9,000			1,500	5,000	15,000
KINGS CO. (I-5)	•	•		•			•	20,000	65,000
SOUTHERN CALIFORNIA									
HEMET, RIVERSIDE CO.	10,000	4,000		35,000			2,000	**X**	**X**

* = Survey less extensive than in other years, but sites counted were done as in other years
** = New pond, 2 sites
• = Essential feature of habitat missing, no settlement possible
X = Habitat did not exist
? = Site not examined sufficiently to provide reliable information
Inc. = Search incomplete compared with more recent years

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
TABLE 7
10 LARGEST COLONIES

TABLE 7A. 10 LARGEST COLONIES OBSERVED ON 2000 SURVEY DATES

County	Date/Nesting	Number	Observer	Location	Substrate	Latitude	Longitude	RE
TULARE	4/20/00	18,000	HAMILTON - DEHAVEN - GREG TE VELDE		WHEAT SILAGE	36 5.47	119 27.1	##
TULARE	4/20/00	15,000	HAMILTON - TOLEDO PIT NW POND [HIST 1995-		CATTAIL	36 05.581	119 41.101	6.2
MERCED	4/21/00	12,000	HAMILTON/ DEHAVEN - MERCED NWR S UNIT E FIELD #3 (REVISED EST 5/3 BASED ON		WHEAT THISTLE/ MUSTARD	37 10.315	120 36.047	6.8
RIVERSIDE	4/21/00	10,000	HAMILTON & PAULEK - HEMET SEWAGE		BULRUSH	33 47.986	117 01.255	4.3
MERCED	4/21/00	8,500	HARVEY - MERCED NWR ARENA PLAINS UNIT HWY 140 TO SNOWBIRD LN BEAR CREEK		H. BLACKBERRY/ WILLOW	37 10.2	120 25.2	2.7
TULARE	4/26/00	7,500	HAMILTON - GEORGE DAIRY [HIST]		SILAGE/ NETTLES	36 0.33	119 28.55	2.9
SAN JOAQUIN	4/22/00	7,000	HOLT - S SIDE HWY 12 POND [HIST 1997-1999]		CATTAIL/	38 12.135	120 59.644	2.1
KINGS	4/21/00	6,000	DEHAVEN - D&T DAIRY/ KANSAS AVE/ 5TH AVE 10 MI N CORCORAN.		SILAGE	36 7.922	119 33.439	1.2
TULARE	4/20/00	6,000	HAMILTON - TOLEDO PIT SW POND		CATTAIL/ BULLRUSH	36 05.298	119 40.992	*
TULARE	4/20/00	5,000	HAMILTON - TULE RIVER AG FIELD		SILAGE	36 03.958	119 51.306	* 1.0
TOTAL	**95,000**							

* Reproductive Effore (RE) of two Toledo Pit colonies was not determined separately

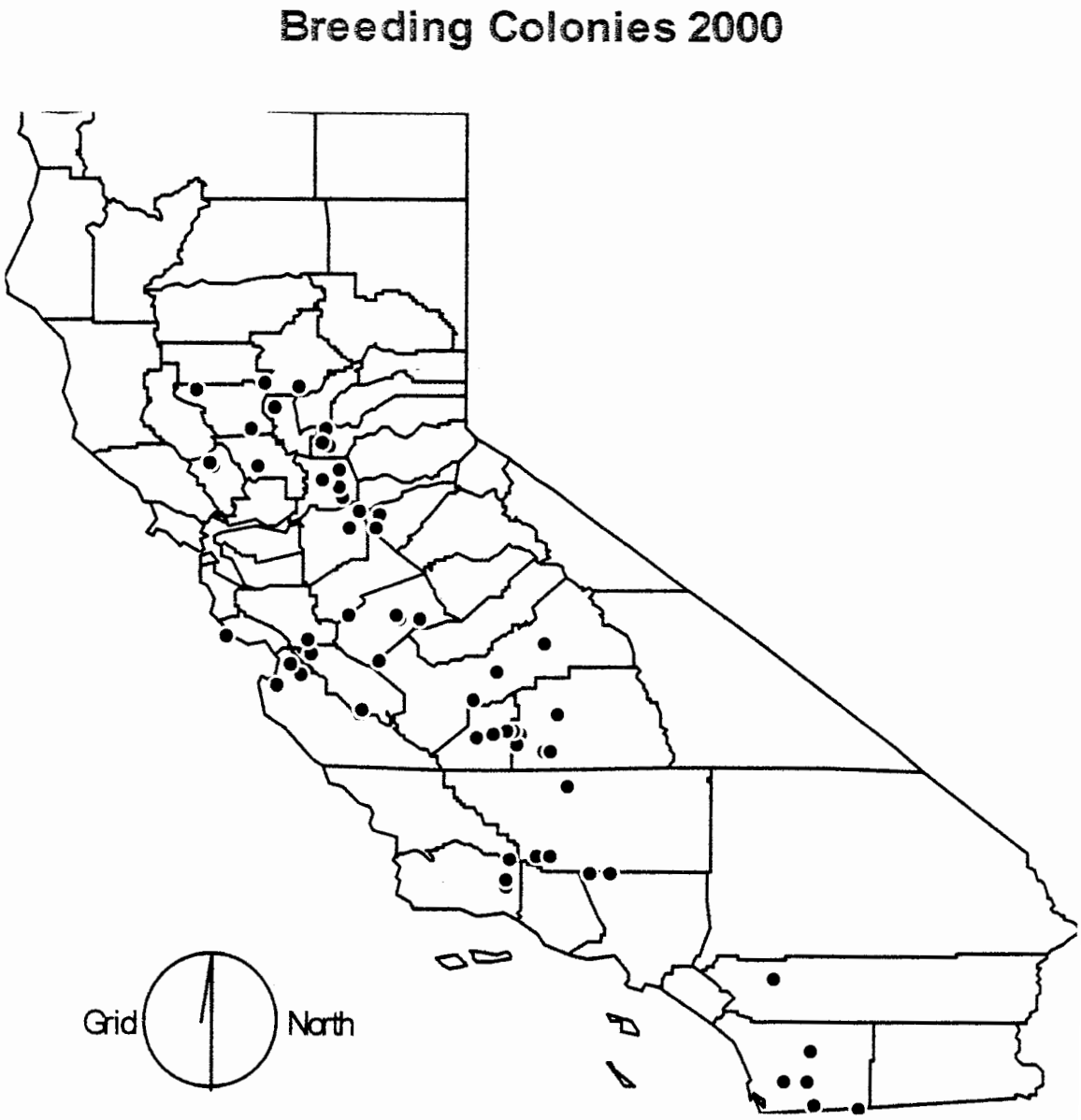
TABLE 7B. 10 LARGEST COLONIES OBSERVED THROUGHOUT THE 2000 BREEDING SEASON

TULARE	4/30/00	30,000	HAMILTON - DEHAVEN - GREG TE VELDE		WHEAT SILAGE	36 5.47	119 27.1	11.3
COLUSA	6/17/00	25,000	HAMILTON - DELEVAN NWR BLOCK 17		CATTAIL	39 17.0	122 5.7	9.0
COLUSA	6/23/00	25,000	HAMILTON - GRAY HILL'S DUCK CLUB SE		CATTAIL	39 13.557	122 05.599	8.2
TULARE	4/30/00	21,000	HAMILTON - TOLEDO PIT		CATTAIL	36 05.581	119 41.101	6.2
MERCED	6/20/00	15,000	KING - AG SLOUGH MERCED/STANISLAUS CO LINE W OF HILMAR E SIDE SAN JOAQUIN		BULRUSH	37 24.492	120 58.160	4.6
COLUSA	6/10/00	12,000	HAMILTON - DELEVAN BLOCK 42		CATTAIL	39 16.680	122 06.256	3.9
MERCED	5/15/00	18,000	HAMILTON/ DEHAVEN - MERCED NWR S UNIT E FIELD #3 (REVISED EST 5/3 BASED ON WITHIN COLONY OBS) LATE SEASON INCREASE		WHEAT/ THISTLE/ MUSTARD	37 12	120 37	6.8
RIVERSIDE	4/21/00	20,000	HAMILTON & PAULEK - HEMET SEWAGE		BULRUSH	33 47.986	117 01.255	4.3
COLUSA	6/13/00	10,000	HAMILTON - ACRE FARMS, INCUBATING		CATTAIL	39 19.149	122	1.9
MERCED	4/21/00	8,500	HARVEY - MERCED NWR ARENA PLAINS UNIT HWY 140 TO SNOWBIRD LN BEAR CREEK		H. BLACKBERRY/ WILLOW	37 17	120 42	2.7
TOTAL	**184,500**							

unty	Date/Nesting	Number	Observer	Location	Substrate	Latitude	Longitude	RE
BLE 7C. COLONY CLUSTERS OBSERVED THROUGHOUT THE 2000 BREEDING SEASON								
Tulare								
LARE	4/20/00	30,000		HAMILTON - DEHAVEN - GREG TE VELDE	WHEAT SILAGE	36 5.47	119 27.1	11.3
LARE	4/20/00	6,000		HAMILTON - TOLEDO PIT SW POND	CATTAIL/ BULLRUSH	36 05.298	119 40.992	1.2
LARE	4/30/00	15,000		HAMILTON - TOLEDO PIT NW POND	CATTAIL	36 05.581	119 41.101	6.2
51,000								
Colusa								
LUSA	6/17/00	25,000		HAMILTON - DELEVAN NWR BLOCK 17	CATTAIL	39 17.0	122 5.7	9.0
LUSA	6/10/00	12,000		HAMILTON - DELEVAN BLOCK 42	CATTAIL	39 16.680	122 06.256	##
LUSA	7/1/00 Y	7,500		HAMILTON - HARBISON RD	CATTAIL			0.3
44,500								
LUSA	6/13/00	10,000		HAMILTON - ACRE FARMS, INCUBATING	CATTAIL	39 19.149	122	1.9
LUSA	6/23/00	25,000		HAMILTON - GRAY HILL DUCK CLUB - SE	CATTAIL	39 13.557	122 05.599	8.2
35,000								
Merced								
RCED	4/21/00	12,000		HAMILTON/ DEHAVEN - MERCED NWR S UNIT E FIELD #3 (REVISED EST 5/3 BASED ON	WHEAT/ THISTLE/ MUSTARD	37 10.315	120 36.047	6.8
RCED	5/15/00	6,000		HAMILTON/ DEHAVEN - MERCED NWR S UNIT E FIELD #3 (REVISED EST 5/3 BASED ON WITHIN COLONY OBS) LATE SEASON INCREASE	WHEAT/THISTLE	37 10.315	120 36.047	
RCED	4/21/00	3,000		CHOUINARD - MERCED NWR E FIELD #5	THISTLE/	37 12	120 37	4.1
RCED	5/15/00	8,000		HAMILTON - MERCED NWR FIELD #5 SECOND BREEDING		37 12	120 37	
RCED	4/21/00	2,000		HARVEY - MERCED NWR DUCK SLOUGH	WHEAT	37 12	120 37	0.8
31,000								
Riverside								
VERSIDE	4/21/00	10,000		HAMILTON & PAULEK - HEMET SEWAGE	BULRUSH	33 47.986	117 01.255	
VERSIDE	5/12/00	10,000		HAMILTON - HEMET SECOND BREEDING	BULRUSH	33 47.986	117 01.255	4.3
20,000								
Merced								
RCED*	6/20/00	15,000		KING - AG SLOUGH MERCED/STANISLAUS CO LINE W OF HILMAR E SIDE SAN JOAQUIN	BULRUSH	37 24.492	120 58.160	4.6
Stanislaus								
ANISLAUS*	6/20/00	2,000		HAMILTON - AG SLOUGH ON MERCED/STANISLAUS CO LINE NEAR DENAIR	BULRUSH	37 28.92	120 58.282	0.6
17,000								
Tulare								
LARE	4/20/00	5,000		HAMILTON - TULE RIVER AG FIELD	SILAGE	36 03.958	119 51.306	1.0
LARE	4/26/00	7,500		HAMILTON - GEORGE DAIRY	SILAGE/ NETTLES	36 0.33	119 28.55	2.9
12,500								
Merced								
RCED	4/21/00	8,500		HARVEY - MERCED NWR ARENA PLAINS UNIT HWY 140 TO SNOWBIRD LN BEAR CREEK	H. BLACKBERRY/ WILLOW	37 17	120 42	4.7
8,500								
San								
JOAQUIN	4/22/00	7,000		HOLT - S SIDE HWY 12 POND [HIST 1997-1999]	CATTAIL/	38 12.135	120 59.644	2.1
7,000								
Kings								
GS	4/21/00	6,000		DEHAVEN - D&T DAIRY/ KANSAS AVE/ 5TH AVE 10 MI N CORCORAN.	SILAGE	36 7.922	119 33.439	1.2
6,000								
TOTAL* **232,500**								

* Exceeds world population. This is a summery of repeated nesting throughout the breeding season.

Figure 1. California distribution of breeding TricoloredBlackbirds during the Survey



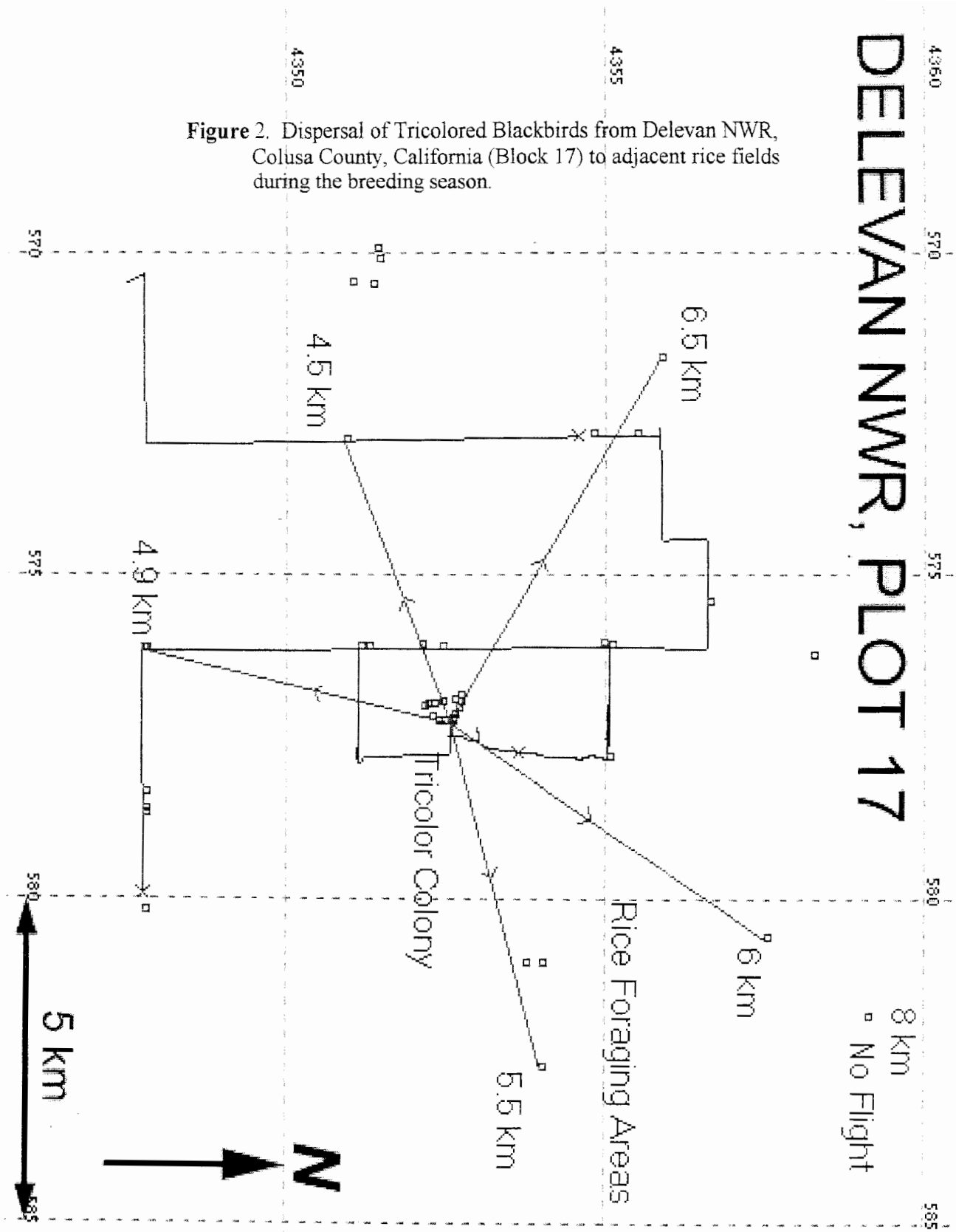


Figure 2. Dispersal of Tricolored Blackbirds from Delevan NWR, Colusa County, California (Block 17) to adjacent rice fields during the breeding season.

Figure 3. Ten largest Tricolored Blackbird colonies observed during the Survey.

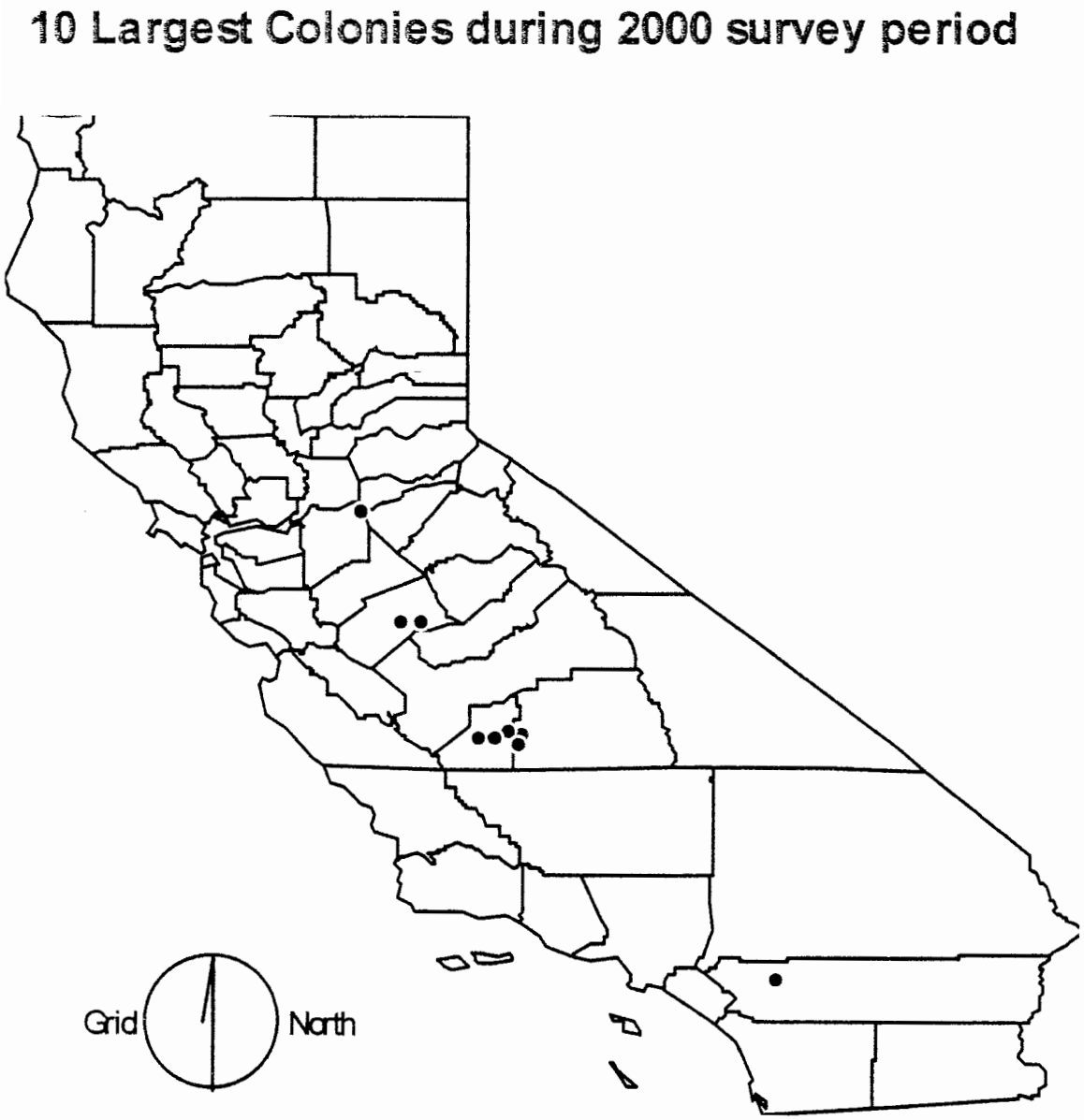


Figure 4. Ten largest colonies observed during the breeding season, 2000. Successive breeding attempts at the same location are included.

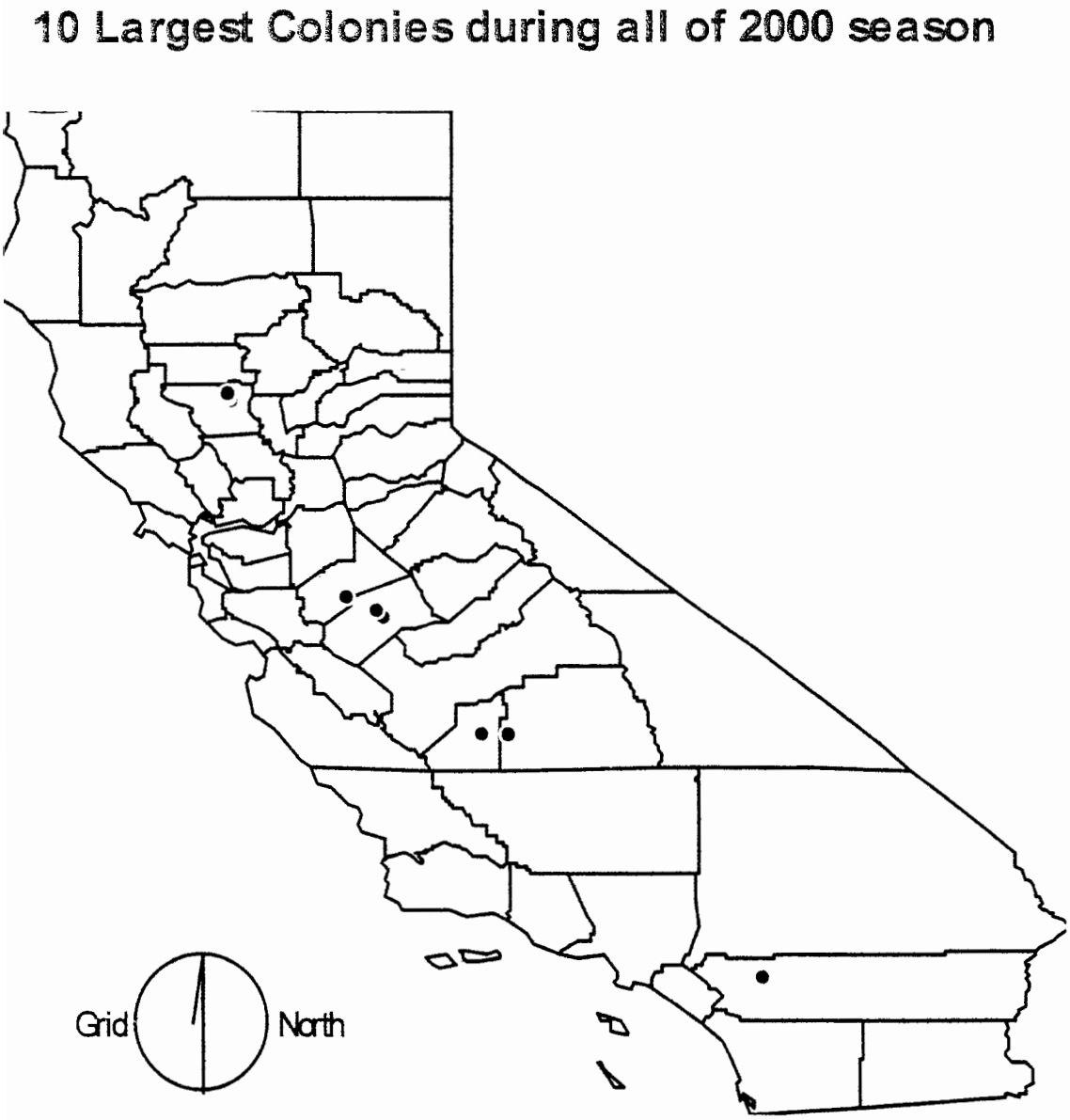


Figure 5. Ten largest megacolonies observed in 2000. These 10 places include 75% of all breeding attempts during the season (% effort?)

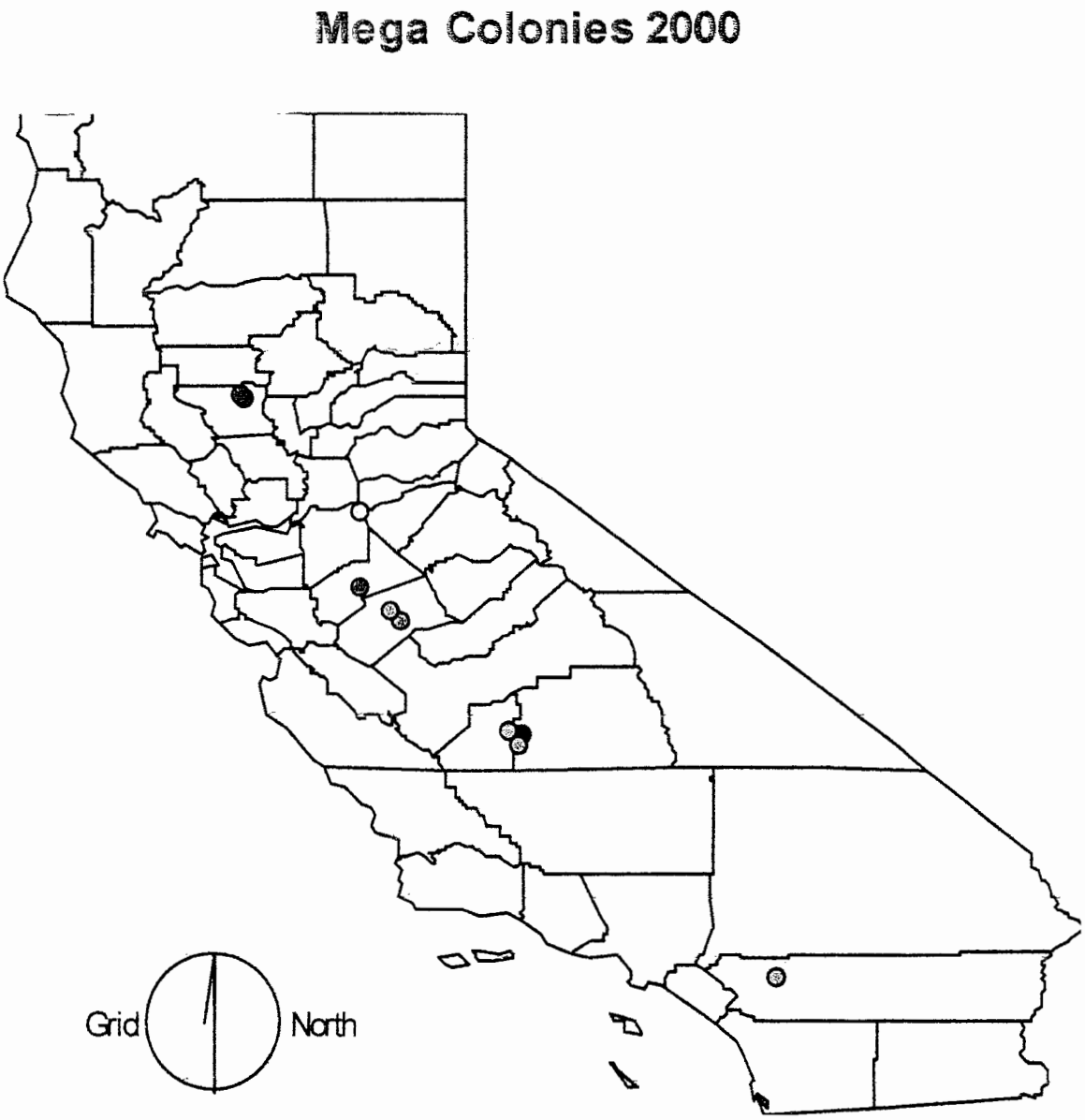
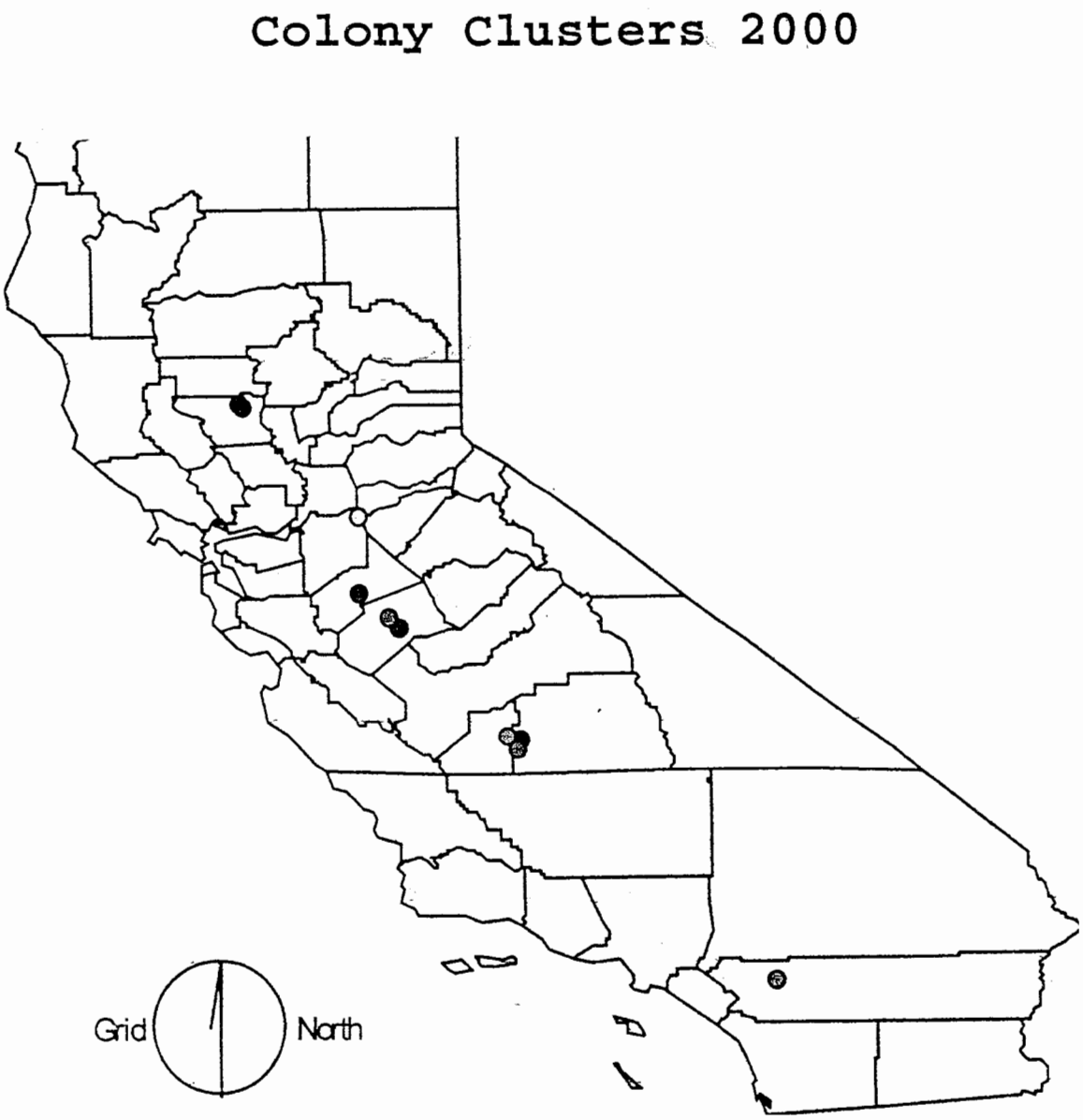


Figure 5. Ten largest colony clusters observed in 2000. These 10 places included 76.2% of the seasonal reproductive effort by Tricolored Blackbirds



TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 1
BREEDING BIRDS

COUNTY:	Total	Date/Nesti		Number	Observer	Location	Substrate	Latitude	Longitude
BUTTE		4/24/00	Y	35	CORDES - UBBWA LITTLE DRY CREEK UNIT. WEST SIDE FIELD II. DFG. OVER WATER.		WILLOW/CATTAIL	39 23.290	121 53.291
BUTTE		4/23/00	Y	5,000	MANOLIS - LONE TREE RD. [HIST 1999]		H. BLACKBERRY	39 22.359	121 34.531
	5,035								
CALAVERAS		4/22/00	Y	40	BALDWIN - 487 HUNT RD POND 2.1 MI W SALT SPRING VALLEY RD [HIST 1997]		CATTAIL	38 02.50	120 50.17
CALAVERAS		4/22/00	Y	220	BALDWIN - 1860 S PETERSBURG RD, VALLEY SPRINGS [HIST 1997]		CATTAIL/ H. BLACKBERRY	38 11.301	120 47.791
	260								
COLUSA		4/22/00	Y	2,500	BEEDY - US BUREC SITES - LODOGA RD, LARGE FLOODED MARSH SE END OF EAST PARK RES. [HIST 1994-1998]		BULRUSH	39 20.390	122 31.244
	2,500								
FRESNO		4/22/00	Y	46	FITTON - LITTLE PANOCHE RES E TIP OF ISLAND [HIST] (STONE- 100)		CATTAIL/WILLOW	36 46.678	120 48.019
FRESNO		4/21/00	Y	5,000	DEHAVEN - N SIDE MONTEIRO BROS DAIRY 5336 W HARLAN RD AT POLK 3 MI NW OF		NETTLES/WHEAT SILAGE	36 26.7	119 53.68
	5,046								
KERN		4/21/00	Y	925	LA BERTEAUX - KERN RIVER @ 2,800 FT. [HIST		H. BLACKBERRY	34 44.087	124 10.236
KERN		4/24/00	Y	1,500	ALLEN - W SIDE RIVER BOTTOM 1.5 MI W SW CORNER KERN NWR THEN DIRT RD S 1.4 MI		CATTAIL/BULRUSH	36 41.98	119 39.63
KERN		4/21/00	Y	4,000	ALLEN -KERN NWR MARSH UNIT 1 [HIST 1992-1999] MAINTAINED		CATTAIL/BULRUSH	34 43.717	119 34.786
KERN		4/21/00	Y	35	HAMILTON - KERN QUARRY; FEMALES [HIST]		CATTAIL	35 38.687	119 34.700
KERN		4/21/00	Y	480	BLACK - MT POSO OIL FIELDS TULE RD #1 BTW GRANITE & BKS GLENNVILLE RD MILE MARKER 152 F 8.05 [HIST 1999]		CATTAIL/BULRUSH	35 37.43	118 58.73
KERN		4/22/00	Y	1,000	CLENDENNEN - SAG POND WIND WOLVES PRESERVE SAN EMIGDIO RANCH [HIST 1998-1999] CATTLE EXCLUDED		CATTAIL	34 56.73	119 11.144
KERN		4/24/00	Y	300	CLENDENNEN - WESTERN CANYON WIND WOLVES PRESERVE SAN EMIGDIO RANCH [HIST 1998-1999] CATTLE EXCLUDED FOUND ONLY 1		CATTAIL/NETTLES		
KERN		4/22/00	Y	1,000	CLENDENNEN - LITTLE LOBO WETLAND WIND WOLVES PRESERVE SAN EMIGDIO RANCH CATTLE EXCLUDED [HIST 1998-1999]		CATTAIL/NETTLES	35 56.933	119 12.46
KERN		4/22/00	Y	300	CLENDENNEN - MUDDY CREEK WIND WOLVES PRESERVE SAN EMIGDIO RANCH SOME CATTLE [HIST 1998]		NETTLES	34 56.436	119 15.00
KERN		4/22/00	Y	600	CLENDENNEN - SANTIAGO SPRINGS WIND WOLVES PRESERVE SAN EMIGDIO RANCH CATTLE EXCLUDED [HIST 1999]		NETTLES	34 56.270	119 16.637
KERN		4/22/00	Y	60	CLENDENNEN - DOGGY FLAT WIND WOLVES PRESERVE SAN EMIGDIO RANCH [NEW]		NETTLES	35 56.685	119 9.507
KERN		4/22/00	Y	400	CLENDENNEN - ECHO CANYON WIND WOLVES PRESERVE SAN EMIGDIO RANCH [NEW]		NETTLES	34 57.513	119 8.978
	10,600								

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 1
BREEDING BIRDS

UNTY:	Total	Date/Nesti		Number	Observer	Location	Substrate	Latitude	Longitude
NGS		4/21/00	Y	4,000	DEHAVEN - 0.25 MI NW RD 36/ AVE 192 6 MI NE CORCORAN. SILAGE BEING MOWED COLONY LOST BIRDS DISPERSING - HATCHLINGS 2D		BARLEY/MUSTARD SILAGE	36 8.45	119 29.6
Kings									
NGS		4/21/00	Y	6,000	DEHAVEN - D&T DAIRY/ KANSAS AVE/ 5TH AVE 10 MI N CORCORAN.		SILAGE	36 7.922	119 33.439
	10,000								
Lassen									
SSEN		4/19/00	Y	300	MANOLIS- HWY 395 CREEK DRAINAGE [HIIST]		CATTAILS	36 56.73	119 12.464
	300								
Los									
S ANGELES		4/22/00	Y	210	GARRETT - N OF AVE B - 8 W OF 250TH ST W NEENACH [HIST]		CATTAIL/BULRUSH	34 47.25	118 34.250
S ANGELES		4/24/00	Y	300	CLENDENNEN - QUAIL LAKE HWY 138 4-5 MI E HWY I-5 ON CALIFORNIA AQUADUCT		CATTAIL/BULRUSH	34 46.16	118 44.7
	510								
Merced									
RCED		4/21/00	Y	480	FITTON - 1 MI N OF END COTTONWOOD RD E ACROSS FROM COMM. TOWER E OF I-5 W OF CANAL [HIST CLOSE TO SITE]		CATTAIL	37 11.839	121 04.462
RCED		4/21/00	Y	2,000	HARVEY - MERCED NWR TURNER ISLAND RD NW DUCK SLOUGH PERIMETER RD		WHEAT	37 12	120 37
RCED		4/21/00	Y	8,500	HARVEY - MERCED NWR ARENA PLAINS UNIT HWY 140 TO SNOWBIRD LN BEAR CREEK		H. BLACKBERRY/ WILLOW	37 10.2	120 25.2
RCED		4/21/00	Y	12,000	HAMILTON/ DEHAVEN - MERCED NWR S UNIT E FIELD #3 (REVISED EST 5/3 BASED ON WITHIN		WHEAT THISTLE/ MUSTARD	37 10.315	120 36.047
RCED		4/21/00	Y	3,000	CHOUINARD - MERCED NWR E FIELD #5		THISTLE/	37 12	120 37
	25,980								
Monterey									
NTEREY		4/21/00	Y	35	TENNEY - HEBERT POND N SIDE SAN JUAN GD 0.1 MI E HEBERT RD [HIST 1994-1995]		CATTAIL	36 45	121 37.2
NTEREY		4/21/00	Y	20	TENNEY - EAST ZABOLA POND E SIDE OLD STAGE RD 8.8 MI S OF SAN JUAN GD RD [HIST		CATTAIL	36 39.25	121 32.554
NTEREY		4/22/00	Y	900	DAVIS - LAGUNA SECA [HIST]		CATTAIL	36 34.156	121 45.970
	955								
Napa									
PA		4/21/00	Y	24	KAY - JULIANA VINYARD POND #2 END BARNETT RD POPE VALLEY [HIST 1997-1999]		CATTAIL	38 39.210	122 23.798
PA		4/21/00	Y	80	KAY - ST SUPERY VINYARD DOLLAR HIDE RD POPE VALLEY [HIST 1993-1999]		H. BLACKBERRY	38 38.389	122 21.943
	104								
Orange									
ANGE		4/22/00	Y	300	ERICKSON - SAND CYN RES NEAR SAND CYN OVERPASS S OF HWY 405 NW OF UC IRVINE		THISTLE		
ANGE		4/21/00	Y	40	AIRD - HWY 405 @ SAND CANYON EXIT IN AG				
ANGE		4/21/00	Y	150	AIRD - LAGUNA NIGUEL REGIONAL PARK, CENTRAL ISLAND		REEDS		
	490								
Placer									
ACER		4/22/00	Y	5,000	RANLETT - PLACER #1 STOCKPOND OFF INDUSTRIAL BLVD. [HIST 1990'S]		BULRUSH	38 51.49	121 19.46
ACER		4/22/00	Y	1,000	RANLETT - PLACER #2 RIOSA RD 5 MI E OF SHERIDAN 0.5 MI W GLADDING RD TEICHERT		H. BLACKBERRY	38 58.8	121 17.53

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 1
BREEDING BIRDS

COUNTY:	Total	Date/Nesti		Number	Observer Location	Substrate	Latitude	Longitude
PLACER	6,200	4/22/00	Y	200	RANLETT - PLACER #3 PLACER HOLDINGS/ TWELVE BRIDGES NEAR STOCKPOND ON HILLSIDE SEEP [HIST 1997-1999]	H. BLACKBERRY	38 50.01	121 15.65
RIVERSIDE	10,000	4/21/00	Y	10,000	HAMILTON & PAULEK - HEMET SEWAGE	BULRUSH	33 47.986	117 01.255
SACRAMENTO		4/22/00	Y	220	COOK - ELDER CREEK RD W OF EXCELSIOR	H. BLACKBERRY	38 30.658	121 18.566
SACRAMENTO		4/22/00	Y	560	COOK - KNOX/FLORIN RDS NESTING, FORAGING IN NW GRASSY FIELDS (BURKE - 200) [HIST	H. BLACKBERRY	38 29.56	121 18.53
SACRAMENTO		4/22/00	Y	500	COOK - HWY 16 D OF BRADSHAW RD BEHIND BETHANY SLAVIC MISSIONARY CHURCH. NESTING (BURKE - 30 FORAGING)	H. BLACKBERRY		
SACRAMENTO		4/22/00	Y	4,200	COOK - S/E CORNER MORRISON CREEK/BRADSHAW RD ; NESTING [HIST]	H. BLACKBERRY	38 31.53	121 19.83
SACRAMENTO		4/22/00	Y	2,500	COOK - E INTERSECTION APRICOT/TAVERNOR RDS [HIST]	H. BLACKBERRY	38 26.21	121 11.2
SACRAMENTO		4/27/00	Y	20	BURKE - JACKSON HWY / BRADSHAW OPPOSITE 10270 ELDER CREEK RD	H. BLACKBERRY	38 30.449	121 20.085
SACRAMENTO		4/26/00	Y	3,900	DEHAVEN - ENTRANCE TO PRARIE CITY ORV PARK 0.5 MI JUNCT WHITE ROCK RD. 2 GROUPS	H. BLACKBERRY	38 35.970 38 36.057	121 10.330 121 10.265
SACRAMENTO	12,275	4/26/00	Y	375	DEHAVEN - 2 MI NW RANCHO SECO COOLING TOWERS OFF TWIN CITIES RD BENEATH POWER LINES INCUBATING (EPANCHIN - 130	H. BLACKBERRY/ ROSE	38 20.884	121 08.887
SAN BENITO		4/22/00	Y	580	SHEARWATER - HWY 25 S BITTERWATER RD IRRIGATION DITCH	CATTAIL/ MUSTARD	36 20.813	120 57.438
SAN BENITO		4/24/00	Y	54	SHEARWATER - SAN FELIPE LAKE. HWY 152 / PACHECO PASS RD	BULRUSH	36 59.099	121 27 843
SAN BENITO	702	4/19/00	Y	68	SHEARWATER - TELEDYNE POND UNION RD/ HWY 156 [HIST 1996-1997; 1999]	CATTAIL	36 50.1	121 26.98
SAN DIEGO		4/22/00	Y	300	UNMACK - JACUMBA POND OLD HWY 80 [HIST 1997-1999]	CATTAIL	32 34.201	116 11.548
SAN DIEGO		4/21/00	Y	340	SMITH - HWY 79 / MESA GRANDE RD JUNCT, SANTA YSABELL	H. BLACKBERRY	33 8.76	116 39.96
SAN DIEGO		4/21/00	Y	600	WINTER - I-8 TO WEST WILLOWS EXIT @ VIEJAS INDIAN CASINO [HIST 1999]	CATTAIL	32 50.5	116 41.68
SAN DIEGO		4/22/00	Y	50	BREISCH - POTRERO S LAKE OF TWIN LAKES RESORT [HIST 1999 ALTERED]	CATTAIL	32 37.417	116 36.734
SAN DIEGO	1,310	4/22/00	Y	20	STOWE - UNITT - LINDO LAKE RT 67 FROM EL CAJON [HIST 1994-1999]	CATTAIL	32 51.30	116 55.00
SAN JOAQUIN		4/22/00	Y	8	HOLT - E. HWYS 12/88 INTERSECTION S. SIDE	CATTAIL	38 03.327	121 04.612
SAN JOAQUIN	7,008	4/22/00	Y	7,000	HOLT - S SIDE HWY 12 POND [HIST 1997-1999]	CATTAIL/BULRUSH	38 12.135	120 59.644

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 1
BREEDING BIRDS

)UNTY:	Total	Date/Nesti		Number	Observer	Location	Substrate	Latitude	Longitude
N LUIS :ISPO San Luis		4/22/00	Y	300	HAMILTON - CUYAMA POND HWY 33. 0.5 MI S OF HWY 166 [HIST] [SCHRAM - 500 4/18/00]		BULRUSH/CATTAIL	34 55.119	119 31.147
N LUIS :ISPO Obispo	500	4/21/00	Y	200	EDELL - POND, HWY 58 E JUNCT BITTERWATER RD [HIST 1999]		CATTAIL/WILLOW	35 21.931	120 04.669
Santa NTA CRUZ	200	4/22/00	Y	200	BULGER - POND 1 KM NE OF GREYHOUND ROCK ON PACIFIC COAST [HIST 1995-1999]		CATTAIL/ BULRUSH	37 1.467	122 14.683
Sutter TTER	200	4/22/00	Y	200	MANOLIS - PASS RD 3.8 MI E WEST BUTTE RD		H. BLACKBERRY	39 11.105	121 48.097
Tulare LARE		4/22/00	Y	1,800	STEARNS - YOKOHL VALLEY ROCKY HILL RD		BULRUSH	36 17.9	119 4.03
LARE		4/20/00	Y	15,000	HAMILTON - TOLEDO PIT NW POND		CATTAIL	36 05.581	119 41.101
LARE		4/26/00	Y	7,500	HAMILTON - GEORGE DAIRY [HIST]		SILAGE/ NETTLES	36 0.33	119 28.55
LARE		4/20/00	Y	5,000	HAMILTON - TULE RIVER AG FIELD		SILAGE	36 03.958	119 51.306
LARE		4/20/00	Y	6,000	HAMILTON - TOLEDO PIT SW POND		CATTAIL/BULLRUS	36 05.298	119 40.992
LARE	53,300	4/20/00	Y	18,000	HAMILTON - (DEHAVEN - HWY 168 GREG TE VELDE JUNCT RD 56 / AVE 168		WHEAT SILAGE	36 5.47	119 27.1
Tuolumne OLUMNE	400	4/23/00	Y	400	SCHEIFERSTEIN - S OF ROCK RIVER RD @				
Yolo LO		4/22/00	Y	30	ROMINGER - RANCH POND [HIST NEW POND		CATTAIL	38 59.748	122 01.811
LO	80	4/22/00	Y	50	HAMILTON - SUNSWEET		CATTAIL	38 37.162	121 57.756
TAL	**153,955**				**BREEDING BIRDS**				

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 2
NONBREEDING BIRDS

COUNTY:	Total	Date/Nestin	Number	Observer Location	Substrate	Latitude	Longitude
BUTTE		4/24/00 N	23	CORDES - OROVILLE WA. WILBER RD. 1.6MI S HWY 162. BIRDS ACTIVELY FORAGING.		39 26.543	121 39.195
BUTTE		4/24/00 N	11	CORDES - Z RD/ SEVEN MILE LN.@ COUNTY SIGN MARKER.	RICE HULL PILE/ SUDAN GRASS	39 32.188	121 55.146
BUTTE		4/22/00 N	80	LOLLER - TABLE MOUNTAIN. N OROVILLE OFF LARGE PARKING LOT W. SIDE CHEROKEE RD.			
BUTTE		4/21/00 N	25	LOMELI - NELSON RD 1.9 MI E OF HWY 99			
BUTTE		4/21/00 N	30	LOMELI - PALERMO/HONCUT HWY NEAR COX		39 23.386	121 32.316
BUTTE		4/21/00 N	60	LOMELI - NELSON RD 1.3 MI E HWY 99 FORAGING FLOCK	DRY VERNAL POOL	39 31.415	121 39.856
BUTTE		4/21/00 N	100	LOMELI - COTTONWOOD RD 1.9 MI E HWY 99 PONDING BASIN	DEAD WILLOWS	39 33.158	121 39.922
BUTTE		4/21/00 N	70	LOMELI - 0.2 MI W WILBUR RD / TRES VIAS RD NEAR BARN. MIXED FLOCK FORAGING		39 30.582	121 39.160
	399						
CALAVERAS		4/22/00 N	500	BALDWIN - ROCK CREEK RD 1.5 MI S MILTON FORAGING FLOCK [HIST 1995, 1996, 1997]		38 1.2	120 50
	500						
FRESNO		4/22/00 N	12	FITTON - LITTLE PANOCHE RES W OF RES BACKWATER ON FENCE		36 44.636	120 51.639
FRESNO		4/22/00 N	3	FITTON -FEEDLOT SHELL RD W OF HWY 33 [HIST] MALES	FEEDLOT	36 13.512	120 20.588
	15						
KERN		4/21/00 N	45	BLACK - 1 MI E OF SITE #1 BTW GRANITE & BKS GLENNVILLE RD MILE MARKER 152 F 9.18	BULRUSH/CATTAIL	35 37.6	118 58.02
KERN		4/22/00 N	5	CLENDENNEN - NEW WATER WIND WOLVES PRESERVE SAN EMIGDIO RANCH [HIST 1998-1999] HEAVILY GRAZED	CATTAIL		
	50						
LASSEN		4/19/00 N	9	TATMAN - HONEY LAKE WA 2 MI FROM DAKIN UNIT FORAGING MIXED FLOCK			
	9						
LOS ANGELES		4/24/00 N	100	CLENDENNEN - CLEVELAND'S POND GORMAN POST RD E SIDE 3 MI S OF GORMAN		34 43.82	118 48.15
	100						
MERCED		4/26/00 N	30	HAMILTON - BOSE RD [HIST 1990'S]	H. BLACKBERRY	37 29.146	120 32.313
MERCED		4/21/00 N	500	SANDE - NUNES & SONS DAIRY HWY 140/ EDMINSTER RD FORAGING FLOCKS CARRING FOOD. COLONY POSSIBLY 1 MI IN BBERRY	H. BLACKBERRY	37 19	120 52
MERCED		4/21/00 N	250	FITTON - REGO DAIRIES BETWEEN ORCHARD & WHITWORTH RDS FORAGING FLOCK		37 12.208	121 03.844
MERCED		4/21/00 N	210	FITTON - BUTTS RD W OF I-5 FORAGING FLOCK		37 09.465	121 04.049
MERCED		4/24/00 N	130	STONE - O'NEILL FOREBAY WA HWY 33 POND #1 ROOSTING ON COTTONWOODS [HIST]		37 4.9	121 1.4
	1,120						

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 2
NONBREEDING BIRDS

)UNTY:	Total Date/Nestin	Number	Observer	Location	Substrate	Latitude	Longitude
ON							
ONTEREY	4/22/00 N	8	DAVIS - LOCH PADDEN				
)NTEREY	4/22/00 N	10	DAVIS -E SIDE OLD STAGE RD POND FORAGING MIXED FLOCK		PASTURE	36 39.088	121 31.467
)NTEREY	4/22/00 N	45	FITTON - PEACH TREE VALLEY POND RT 25 S			36 10.881	120 48.161
	63						
ANGE	4/22/00 N	5	KENYON - VILLAGE POND PARK BETWEEN MUIRLANDS AND ROCKFIELD IN LAKE FOREST				
	5						
SA CRAMENTO	4/22/00 N	39	COOK - SCOTT RD S OF WHITE ROCK RD FORAGING IN FIELDS (FREGIEN - 50)		RANGELAND	38 35.215	121 07.642
CRAMENTO	4/22/00 N	430	COOK - S OF ELDER CREEK, FORAGING AND ROOSTING [HIST]		WILLOWS		
CRAMENTO	4/22/00 N	290	COOK - CLAY STATION RD 1.1 MI S OF DILLARD RD; MOSTLY MALES FORAGING FLOCK		PASTURE	38 20.25	121 09.76
CRAMENTO	4/22/00 N	2,600	COOK - NW CORNER OF KATENA / CLAY STATION RDS FORAGING FLOCK				
CRAMENTO	4/22/00 N	500	FREGIEN - SCOTT RD 2.5 MI S WHITE ROCK RD POND [HIST 1997-1999]		CATTAIL/BULRUSH	38 3.85	121 07.89
CRAMENTO	4/22/00 N	60	BURKE - NATOMAS RD S OF RIEGO RD DEWITT FARMS & AJOINING FIELDS		H. BLACKBERRY		
CRAMENTO	4/24/00 N	29	TREASTER - DILLARD/ COLONY RDS NEAR END WOODS RD FORAGING GRASSLAND VERNAL		SEDGE		
CRAMENTO	4/23/00 N	160	TREASTER - HOWARD RANCH MIXED FLOCK FORAGING GRASSLAND VERNAL POOL.				
	4,108						
San A BENITO	4/22/00 N	1	FITTON - BITTERWATER CK		ELDERBERRY	36 19.789	120 56.466
N BENITO	4/22/00 N	280	FITTON - HWY 25 JUNCT COALINGA-LOS GATOS CK RD FLYING FLOCK			36 24.055	120 52.942
N BENITO	4/22/00 N	34	SHEARWATER - LONOAK RD 1.9 HWY 25 FLYING				
N BENITO	4/22/00 N	40	SHEARWATER - HWY 25 ALONG DITCH FLYING				
N BENITO	4/22/00 N	38	SHEARWATER - HWY 25 @ LEWIS CK BRIDGE FLOCK BATHING IN CREEK			36 18.033	120 55.803
N BENITO	4/22/00 N	261	SHEARWATER - IDRIA RD @ 7.0 MILE MARKER. MALES FORAGING NEAR CREEK			36 31.005	120 49.959
N BENITO	4/24/00 N	64	SHEARWATER - CIENGA & AIRLINE (HWY 25) FORAGING FLOCK PASTURE MUSTARD NEAR DRAINAGE DITCH [HIST PAICINES RES CLOSE]			36 42.862	121 16 655
	718						
San N DIEGO	4/21/00 N	50	MCINTOSH - AMIGO RD / HWY 78 POND [HIST		CATTAIL/BULRUSH		
N DIEGO	4/20/00 N	400	UNMACK - TULE LAKES, WIEST RANCH MC CAIN VALLEY RD				
N DIEGO	4/24/00 N	1	MAHRDT - RESERVOIR [HIST 1997 - 1999				

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 2
NONBREEDING BIRDS

COUNTY	Total	Date/Nestin	Number	Observer Location	Substrate	Latitude	Longitude
SAN DIEGO		4/22/00 N	30	PRYDE - SANTEE LAKES FLOCK FORAGING GRASSLAND [HIST]		32 51.42	117 00.36
SAN DIEGO		4/24/00 N	200	WEAVER - CHIHUAHUS CREEK BRIDGE HWY 79 W OF OAK GROVE HAYING FORAGING AREA			
SAN DIEGO		4/22/00 N	30	BREISCH - 25026 POTRERO VALLEY RD FLOCK IN OPEN FIELD		32 36.337	116 36.317
	711						
SAN JOAQUIN		4/22/00 N	52	YEE - S AIRPORT WY & AVENUE D FLOCK			
SAN JOAQUIN		4/22/00 N	13	HOLT - CLEMENTS RD NEAR COMSTOCK RD HERON ROOST REMOVED [HIST 1995]		38 05.387	121 07.426
	65						
SAN LUIS OBISPO		4/21/00 N	500	EDELL - 5650 BITTERWATER RD FLOCK FORAGING IN GRASSLAND		35 21.931	120 04.669
	500						
STANISLAUS		4/21/00 N	15	FITTON - ORESTIMBRE CK NEWMAN RANCH		37 18.028	121 09.314
	15						
TUOLUMNE		4/25/00 N	175	SCHIEFERSTEIN - ROCK RIVER RD HETCH HETCHY LIMING PLANT; MALES. POSSIBLE COLONY IN BBERRY ON BROOKS RANCH	PASTURE		
	175						
TOTAL	**8,553**			**NONBREEDING BIRDS**			

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 3
NO BIRDS

UNTY	Date/Nestin	Number	Observer	Location	Substrate	Latitude	Longitude
AL AMEDA	4/22/00 N		PEETERS - SUNOL AREA (3 SITES) [HIST]		CATTAIL	37 34.16	121 52.30
BU UTTE	4/24/00 N	0	SILVEIRA - LLANO SECO SACRAMENTO RIVER NWR @ 7 MILE / NELSON RDS (ENTIRE REFUGE)			39 32.83	121 54.64
SA LAVERAS	4/22/00 N	0	BALDWIN - COPPEROPOLIS RES [HIST 1996-		CATTAIL	37 89.09	120 38.22
CO LUSA	4/24/00 N	0	CARPENTER - DELEVAN NWR (ENTIRE REFUGE) [HIST 1994, 1998]		H. BLACKBERRY	39 17	122 5.7
LUSA	4/24/00 N	0	WOLDER - COLUSA NWR @ ABLE / DAM RDS INTERSECTION (ENTIRE REFUGE)		CATTAIL	39 8.92	121 62.07
LUSA	4/22/00 N	0	BEEDY - PIONEER DUCK CLUB, LURLINE RD FLOODED, GOOD GROWTH		CATTAIL/TULE	39 13.874	122 05.859
LUSA	4/22/00 N	0	BEEDY - ACRE FARMS LURLINE RD DEEP FLOODED [HIST]		CATTAIL/TULE	39 19.149	122 06.218
LUSA	4/22/00 N	0	BEEDY - CAPITOL OUTING CLUB, SANTA FE RD HISTORICAL FLOODED BURNED THIS YEAR		CATTAIL	39 13.903	122 06.985
EL DORADO	4/23/00 N	0	MALL - S HWY 50 CRAZY HORSE CAMPGROUND [1987 HIST SITE CONVERTED RESIDENTIAL]			38 39.250	121 00.25
DORADO	4/23/00 N	0	MALL - GOLD HILL RD .25 MI W HWY 49		H. BLACKBERRY/ CATTAIL	38 45.75	120 51.717
DORADO	4/23/00 N	0	MALL - SALMON FALLS RD POND 3.9 MI S OF PIOLOT HILL [HIST 1971]		H. BLACKBERRY/ CATTAIL	38 47.45	121 01.116
FR ESNO	4/27/00 N	0	HAMILTON - PRODUCER'S DAIRY SE CORNER		SILAGE	36 44.087	120 13.403
ESNO	4/27/00 N	0	HAMILTON - PRODUCER'S POND [HIST]		CATTAIL	36 44.562	120 13.936
ESNO	4/21/00 N	0	FITTON - LITTLE PANOCHE CK GRAVEL PIT [HIST] WATER WITHHELD SITE DISTURBANCE		CATTAIL	36 47.865	120 44.959
ESNO	4/22/00 N	0	FITTON - AT LITTLE PANOCHE /MINE CREEKS		WILLOWS	36 44.381	120 51.639
ESNO	4/22/00 N	0	FITTON - LAKE LOS NIETOS [HIST]		CATTAIL	36 44.636	120 51.639
ESNO	4/22/00 N	0	FITTON - NW COLINGA GRAVEL PIT [HIST]		CATTAIL	36 09.925	120 22.243
ESNO	4/22/00 N	0	FITTON - FRESNO W OF SUTTER AVE [HIST]			36 05.492	120 12.730
GL ENN	4/25/00 N	0	WOLDER - HWY I5 RD 7 W RD HH [HIST 1994]		H. BLACKBERRY		
ENN	4/24/00 N	0	CARPENTER - SACRAMENTO NWR @ DUCK PONDS (ENTIRE REFUGE) [HIST 1996]			39 25.40	121 70.40
ENN	4/25/00 N	0	CARPENTER/WOLDER - NE JUNCT RD 99W & RD 39 (BAYLISS) POOR HABITAT		TULE/ WILLOW		
ENN	4/25/00 N	0	CARPENTER/WOLDER - RD 45 & RD VV SITE DESTRUCTION FIRE & SPRAY [HIST 1995]		H. BLACKBERRY	39 32.98	122 3.54

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 3
NO BIRDS

COUNTY	Date/Nestin	Number	Observer	Location	Substrate	Latitude	Longitude
GLENN	4/25/00 N	0	CARPENTER/WOLDER - RD VV & RD 34; (DAIRY N OF RD 34)		H. BLACKBERRY	39 37.02	122 3.21
GLENN	4/25/00 N	0	CARPENTER - RD PP & RD 45			39 32.82	122 67.93
GLENN	4/25/00 N	0	CARPENTER /WOLDER- GRAVEL PIT RD 45 &		CATTAIL		
GLENN	4/25/00 N	0	CARPENTER/WOLDER - GRAVEL PIT S OF RD 48 PRIVATE PROPERTY PETE KNIGHT		CATTAIL	39 32.1	122 10.18
HUMBOLDT	4/22/00 N	0	JULIANO - DRAKE HILL RD, HWY 101 S. OF FORTUNA AND VICINITY [HIST]				
KERN	4/21/00 N	0	HAMILTON - WILDWOOD RD		WHEAT/BARLEY	35 43.891	119 26.225
KERN	4/20/00 N	0	HAMILTON - BAKERSFIELD RECHARGE (3 SITES) [HIST]			35 19.529	119 12.173
KERN	4/22/00 N	0	CLENDENNEN - THREE SPRINGS WIND WOLVES PRESERVE SAN EMIGDIO RANCH		NETTLES		
KERN	4/22/00 N	0	CLENDENNEN - SOMETIMES LAKE WIND WOLVES PRESERVE SAN EMIGDIO RANCH [HIST 1999] EPHEMERAL DRY		CATTAIL		
KINGS	4/22/00 N	0	HAMILTON - KINGS CANAL - 24TH & ELGIN [HIST CATTAILS CLEARED]			36 22.459	119 53.235
LOS ANGELES	4/16/00 N	0	GARRETT - PIUTE PONDS EDWARDS AIRFORCE BASE S OF AVE C 1.5 MI E OF SIERRA HWY		BULRUSH	34 47.44	118 7.46
MENDOCINO	4/22/00 N	0	MORLEY - POND STATE HWY 20. LOGGING CAMP 19 MCGUIRE RANCH			39 21.164	123 36.669
MERCED	4/21/00 N	0	HARVEY - MERCED NWR ARENA PLAINS UNIT SUNRISE & PELICAN LAKE [HIST]		TULE	37 17	120 42
MERCED	4/21/00 N	0	CHOUINARD - ARENA PLAINS UNIT, MERCED NWR HWY 165 N/ E HWY 140, S SNOWBIRD LN [HIST] WETLANDS			37 17	120 42
MERCED	4/26/00 N	0	HAMILTON - STAIR STEP [HIST]			37 02.389	120 58.103
MERCED	4/26/00 N	0	HAMILTON - WILLOWS IN VICINITY		H. BLACKBERRY	37 18.474	120 50.564
MERCED	4/26/00 N	0	HAMILTON - EDMINSTER RD AREA		H. BLACKBERRY		
MERCED	4/26/00 N	0	HAMILTON - HENRY MILLER [HIST 1999]			37 06.005	120 56.488
MERCED	4/25/00 N	0	HAMILTON - H. BLACKBERRY [HIST] DEGRADED, POISONED OUT		H. BLACKBERRY	37 18.107	120 51.068
MERCED	4/25/00 N	0	HAMILTON - H. BLACKBERRY [HIST 1994]		H. BLACKBERRY	37 18.019	120 51.098
MERCED	4/25/00 N	0	HAMILTON - BARN [HIST 1993]		BULRUSH	37 08.144	120 49.997

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 3
NO BIRDS

UNTY	Date/Nestin	Number	Observer	Location	Substrate	Latitude	Longitude
M ERCED	4/21/00 N	0	SANDE - BIG BOTTOM DAIRY N SAN JOAQUIN R LEVEE HWYS 165 & 140			37 18	120 53
ERCED	4/21/00 N	0	SANDE - KESTERSON FREITAS UNITS HWYS 165 &140 [HIST MAINTAINED]			37 15	120 52
ERCED	4/21/00 N	0	HARVEY - MERCED NWR DUCK SLOUGH [HIST SITE DISTURBANCE FLOODING & FENCELINE			31 12	120 37
ERCED	4/21/00 N	0	CHOUINARD - MERCED NWR DEAD MAN SLOUGH [HIST]			37 12	120 37
ERCED	4/21/00 N	0	WOOLINGTON- WEST BEAR CK - EAST BEAR CK SITES [HIST]			37 15	120 47
ERCED	4/21/00 N	0	WOOLINGTON - LOS BANOS DETENTION DAM			36 58.43	120 59.50
M ONTEREY	4/21/00 N	0	TENNEY - SMALL ZABALA POND / OLD STAGE RD 8.3 MI S OF SAN JUAN GD RD [HIST 1994-1996			36 39.626	121 32.839
ONTEREY	4/23/00 N	0	TENNEY - WARNER POND GARRIN RD 0.25 MI E OF ELKHORN RD			36 40.58	121 43.9
ONTEREY	4/21/00 N	0	TENNEY - CRAZY HORSE POND SAN JUAN GD / CRAZY HORSE CYN RD S			36 46.378	121 36.094
ONTEREY	4/22/00 N	0	DAVIS - HEBERT RD POND			36 45.687	121 37.115
NA PA	4/24/00 N	0	WYKOFF - NAPA VALLEY CORP DR/ ANSELMO CT MARSH [HIST 1998]			38 14.786	122 16.702
PA	4/24/00 N	0	WYKOFF - NAPA-SONOMA WA POND HUICHICA CK UNIT [HIST OVER GROWN WILL BE		CATTAIL	38 12.716	122 70.628
PA	4/21/00 N	0	KAY - JULIANA VINYARD POND #1 END BARNETT RD POPE VALLEY [HIST 1997-1999]		CATTAIL	38 39.210	122 23.798
RIV ERSIDE	4/23/00 N	0	PAULEK - SAN JACINTO WA (ENTIRE REFUGE)			33 52.75	117 06.71
ERSIDE	4/21/00 N	0	HAMILTON - BRIDGE ST RIVERSIDE		NETTLE		
SA CRAMENTO	4/22/00 N	0	BURKE - MATHER INTERNATIONAL RD / ZINFINDEL DR. DECIMATED BY GRAVEL CO				
CRAMENTO	4/22/00 N	0	LATROBE RD 2 MI N OF JACKSON HWY		H. BLACKBERRY	38 31.038	121 07.196
CRAMENTO	4/22/00 N	0	CLARKSBURG RD E OF BIDWELL RD				
CRAMENTO	4/22/00 N	0	SLOUGHOUSE RD E OF GRANTLINE RD		H. BLACKBERRY	38 28.00-13	121 13.36-14.32
CRAMENTO	4/22/00 N	0	HAUSCHILT RD N OF HWY 104				
CRAMENTO	4/22/00 N	0	CHEROKEE RD 1/3 MI S OF HWY 104		H. BLACKBERRY	38 17.066	121 15.914
CRAMENTO	4/22/00 N	0	INTERSECTION SHELDON RD / WATERMAN RD		H. BLACKBERRY	38 26.290	121 20.893
CRAMENTO	4/22/00 N	0	BRADSHAW RD S OF SHELDON RD		H. BLACKBERRY	38 27.433	121 20.087
CRAMENTO	4/22/00 N	0	INTERSECTION GRANTLINE RD / MOSHER RD		H. BLACKBERRY	38 23.40	121 20.10
CRAMENTO	4/22/00 N	0	ALTA MESA RD 1 MI S OF BORDON RD		H. BLACKBERRY	38 16.53	121 13.49
CRAMENTO	4/22/00 N	0	FLORIN RD 1 MI E OF ELK GROVE RD				
CRAMENTO	4/22/00 N	0	DAVIS RD S OF DILLARD RD		H. BLACKBERRY	38 24.084	121 15.355
CRAMENTO	4/22/00 N	0	IVIE RD AT HWY 104		H. BLACKBERRY		
CRAMENTO	4/22/00 N	0	WALNUT RD @ HWY 99				
CRAMENTO	4/22/00 N	0	EAGLES NEST RD 1/2 MI S OF JACKSON HWY		H. BLACKBERRY	38 29.03	121 15.50
CRAMENTO	4/22/00 N	0	INTERSECTION GRANTLINE RD / BRADSHAW		H. BLACKBERRY		
CRAMENTO	4/22/00 N	0	COSUMNES RIVER N OF DILLARD RD 2 MI E OF			38 21.54	121 19.48

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 3
NO BIRDS

COUNTY	Date/Nestin	Number	Observer	Location	Substrate	Latitude	Longitude
SACRAMENTO	4/22/00 N	0	MARENGO RD 1/2 MI N OF SIMMERHORN RD		H. BLACKBERRY		
SACRAMENTO	4/22/00 N	0	INTERSECTION BORDEN RD / WEST RD		H. BLACKBERRY		
SAN BENITO	4/24/00 N	0	SHEARWATER - HWY 152 BETTENCOURT DAIRY [HIST YES]			36 58.998	121 28.106
SAN BENITO	4/24/00 N	0	SHEARWATER - HWY 25 & CIENEGA RD PAICINES RESERVOIR [HIST]			36 43.070	121 16.839
SAN BENITO	4/24/00 N	0	SHEARWATER - FRYE LANE [HIST 1996-1997]		BULRUSH	36 55. 930	121 25.471
SAN BENITO	4/24/00 N	0	SHEARWATER - POND RIGEMARK GOLF COURSE FAIRVIEW RD & HWY 25 [HIST]			36 48.957	121 21.802
SAN BENITO	4/24/00 N	0	SHEARWATER - POND SANTA ANITA/QUIEN SABE RDS [HIST 1996]			36 47.854	121 15.798
SAN BENITO	4/24/00 N	0	SHEARWATER - GRANITE ROCK POND DEEP WATER SOUTHSIDE RD .9 MI JUNCT UNION RD			36 48.828	121 23 059
SAN JOAQUIN	4/22/00 N	0	HOLT - CLEMENTS / COMSTOCK RDS INTERSECTION [HIST 1994-1997]			38 05.445	121 07.687
SAN JOAQUIN	4/22/00 N	0	HOLT - DEAD END GILMORE RD HIMALAYA BLACKBERRIES REMOVED [HIST 1990-1995]			38 04.279	120 99.442
SAN LUIS	4/22/00 N	0	EDELL - POND HWY 46 5 MI E HWY 1 [HIST				
SAN LUIS	4/21/00 N	0	EDELL - POND CRESTON RD PASO ROBLES			34 55.8	119 30.75
SAN LUIS OBISPO	4/22/00 N	0	EDELL - POND, VILLACK RD/ 3 MI N CAYUCAS, HWY 1 [HIST 1987-1989]		CATTAIL		
SAN LUIS OBISPO	4/24/00 N	0	STILES - SEWAGE EVAP PONDS, HWY 1 N CUESTA COLLEGE [HIST 1988]		BULRUSH		
SANTA CLARA	4/22/00 N	0	MILLER - SARGENT CREEK				
SANTA CLARA	4/22/00 N	0	MILLER - COYOTE RANCH PERCOLATION		TULES		
SANTA CLARA	4/22/00 N	0	MILLER - CALERO RESERVOIR MARSH		TULES		
SANTA CLARA	4/22/00 N	0	MILLER - SILVER CREEK		CATTAIL		
SANTA CLARA	4/22/00 N	0	MILLER - HALLS VALLEY				
SANTA CLARA	4/22/00 N	0	MILLER - ARROYO BAYO				
SANTA CLARA	4/22/00 N	0	MILLER - CALAVERAS RESERVOIR				
STANISLAUS	4/20/00 N	0	HAMILTON - HWY I-5			37 19.737	121 06.447
SUTTER	4/24/00 N	0	WOLDER - SUTTER NWR (ENTIRE REFUGE)			39 4.42	121 45.52
SUTTER	4/24/00 N	0	WOLDER - BUTTE SINK (ENTIRE REFUGE)			39 15.83	121 54.31
SUTTER	4/22/00 N	0	MANOLIS - WEST BUTTE RD S OF ENTRANCE SUTTER BUTTE OUTING CLUB [HIST 1994?				
SUTTER	4/22/00 N	0	MANOLIS - GILSIZER SLOUGH AT SUTTER BYPASS /W END THOMPSON RD[HIST				
TEHAMA	4/24/00 N	0	WOLDER - H. BLACKBERRY HWY I5 N OF				

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 3
NO BIRDS

UNTY	Date/Nestin	Number		Observer	Location	Substrate	Latitude	Longitude
LO	4/24/00	N	0	MOORE - ANDERSON POND		CATTAIL	38 36.570	121 59.844
LO	4/22/00	N	0	HAMILTON - CHAMBERLAIN H. BLACKBERRY DELETED (2 SITES) [HIST]		H. BLACKBERRY	38 35.569	121 51.746
LO	4/22/00	N	0	HAMILTON - WINTERS SEWAGE [HIST]		CATTAIL	38 32.52	121 59.28
BA	4/22/00	N	0	BEEDY - TANABE /RAMIREZ RDS [HIST AREA]				
BA	4/24/00	N	0	PEACEMAKER - HWY 65 TO 40 MILE RD, TO HOFFMAN RD RANCHO RIO OSO DUCK CLUB		H. BLACKBERRY		
BA	4/24/00	N	0	PEACEMAKER - HWY 65 W DAIRY RD N OF WHEATLAND [HIST 1996-1997] AMPHITHEATER UNDER CONSTRUCTION CLOSE]			39 2.67	121 27.58
BA	4/24/00	N	0	PEACEMAKER - FORTY MILE RD BILL GRAHAM PRESENTS [HIST 1996]				

1999 Tricolored Blackbird Survey Form

County of Observation:_____ Date of Observation:_____
Observer:_____ Telephone #:_____
Address:_____

Target Date: Saturday, April 24 and Sunday, April 25, 1999
Reports for any *breeding season* date are important. Specify date(s) of your observations.

Complete oneform for *each* individual nesting or non-nesting colony and each exact location where tricolors have been observed nesting in the past but were not present on April 26. **Please return this form immediately to allow researchers time to follow up on your observations.**

Send the completed form to: Kevin Hunting
California Department of Fish and Game
Sacramento, CA 95814
Phone: (916) 657-4436
Fax: (916) 653-1019

NESTING COLONIES (if no nesting behavior is observed, please go to Non-nesting, below):
Estimated number and sex ratio of adults:_____ (Whole number, not a range or +/- please)

☐ Some Singing.....	Yes	No	Please circle choice that applies
☐ Carrying nesting material.....	Yes	No	
☐ Adults carrying food.....	Yes	No	
☐ Fledglings out of nest.....	Yes	No	

☐ Estimated area (acres) of habitat occupied by nests:_____ Ac.
☐ Estimated area (acres) of habitat not occupied by nests:_____ Ac.
☐ Nesting Substrate: Do not use tules as a category. Instead, use cattails, bulrushes, or other specific plant species designations. (If more than one species, use percentages.)
___Cattails ___ Himalaya Blackberries ___ Willows
___Bulrushes ___Other Blackberries ____Nettles
___Ag Fields (circle type): barley wheat silage thistles mustard
___Other (specify species): _____

NON-NESTING COLONIES OR FLOCKS:
☐ Estimated number and sex ratio of adults:_____(Whole number, not a range or +/-please)

LOCATION (Nesting or Non-Nesting):
Please give exact location and include a copy of a map (topo maps are best) if possible.
USGS quad name and UTM coordinates are preferred.
☐ USGS Quad Name _____
☐ UTM Coordinates (GPS)_____N_____E_____Zone
☐ Township, Range, Section: Twn Rng Sec
Directions: How to reach the observation site. Road names, distances travelled, local landmarks
☐ Road designations: _____
☐ Owner or local contact, if known: _____
HISTORY: Have you or has anyone in your party observed tricolors nesting at this exact or nearby (specify which) location in the past? If yes, give years: _____
Condition of historic site: _____

2000 Tricolored Blackbird Survey Form

2000 Tricolor Survey: fax to 530 752 3350 or E-mail wjhamilton@ucdavis.edu

County of Observation: Date of Observation:_____

Observer: _____ Telephone_____

Address: _____

Email: _____

Reports for any breeding season date are important. Specify date(s) of your observations.

Target Dates: Saturday, April 22, Sunday, April 23, 2000. If these not possible go on April 21 or 24.

Complete one form for each individual nesting or non-nesting colony and each location where tricolors were observed nesting in the past but were not present on April 22 or 23 of this year. Please e-mail or fax this form

Mail the completed form to:

Bill Hamilton
Division of Environmental Science and Policy (DESP will do),
University of California Davis, Davis, CA 95616.
Fax: (530) 752 3350 . Email wjhamilton@ucdavis.edu
Mobile phone (530) 304 6655. Phone (530) 752 1122

NESTING COLONIES (if no nesting behavior is observed, please go to Non-breeding, below.

Estimated number and sex ratio of adults: (Whole number, not a range or +/- please)

☐ Some Singing..... Yes No circle all choices that apply

☐ Some Carrying nesting material..... Yes No

☐ Some Adults carrying food..... Yes No

☐ Some Fledglings out of nest..... Yes No

☐ Estimated area (acres) of habitat occupied by nests: Ac.

☐ Estimated area (acres) of habitat not occupied by nests: Ac.

☐ Nesting Substrate: Do not use tules as a category. Instead, use cattails, bulrushes, or other. If more than one species supports nests estimate percentages.

☐ Cattails Himalaya Blackberries Willows Bulrushes Other Blackberries _____

Length, width, shape of area occupied by this colony _____

Nearest water source used by this colony: _____

NON-BREEDING COLONIES OR FLOCKS (see information page).

☐ Number and sex ratio of adults:_____(Whole number, not a range or +/-please)

LOCATION (Breeding or non-breeding): Exact location, copy of a map (topo maps are best) if possible. GPS measurements are great. Please indicate where the GPS reading was taken relative to the colony. Or give USGS designations or copy part of a map.

☐ Latitude_____Longitude_____

☐ Township, Range, Section: Twn Rng Sec

Directions: How to reach the observation site. Road names, distances traveled, local landmarks

☐ Road designations: _____

☐ Owner or local contact, if known: _____

HISTORY: Have you or has anyone in your party observed tricolors nesting at this exact or nearby (specify which) location in the past? If yes, give years: _____

Condition of historic site: _____

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 5
LATE SEASON BIRDS

COUNTY	Total	Date/Nesting		Number	Observer Location	Substrate	Latitude	Longitude
COLUSA		5/9/00	N	20	HAMILTON - CHISOLM COVE EAST PARK RES	CATTAIL	39 20.390	122 31.244
COLUSA		6/22/00	N	0	HAMILTON - COLUSA NWR. NO WATER, MARSH DRYING [HIST]	BULRUSH	39 8.92	121 62.07
COLUSA		6/13/00	Y	10,000	HAMILTON - ACRE FARMS, INCUBATING	CATTAIL	39 19.149	122 06.218
COLUSA		6/13/00	Y	5,000	HAMILTON - HWY I-5 & MAXWELL RD I	CATTAIL	39 18.29	122 11.515
COLUSA		7/9/00	Y	2,000	HAMILTON - HWY I-5 & MAXWELL RD I I	BULRUSH/ CATTAIL	39 18.05	122 12.05
COLUSA		6/10/00	Y	12,000	HAMILTON - DELEVAN BLOCK 42	CATTAIL	39 16.680	122 06.256
COLUSA		6/17/00	Y	25,000	HAMILTON - DELEVAN NWR BLOCK 17	CATTAIL	39 19.154	122 06.219
COLUSA		6/23/00	Y	25,000	HAMILTON - GRAY HILL DUCK CLUB - SE	CATTAIL	39 13.784	122 05.703
COLUSA	86,520	7/1/00	Y	7,500	HAMILTON - HARBISON RD	CATTAIL		
FRESNO	0	5/2/00	N	0	HAMILTON - LITTLE PANOCHE PARKING LOT		36 47.124	120 47.942
GLENN	0	6/21/00	N	0	HAMILTON - BLUE GUM RD CHEESE FACTORY PONDS, CATTAIL DELETED TO CONTROL ENVIRONMENTAL PROBLEMS		39 35.043	122 11.440
KERN		7/21/00	Y	700	BARNES - PRINCE'S POND	BULRUSH	35 40.33	118 20.20
KERN		7/21/00	Y	100	BARNES - 0.5 MI FROM PRINCE'S POND	BULRUSH/ H. BLACKBERRY		
KERN		6/8/00	Y	2,000	HAMILTON - CORNER COCORAN AND HWY 46 NE PITS, PROVISIONING FLEDGLINGS	TAMARISK/ CATTAIL	35 36.281	119 34.318
KERN		6/4/00	N	0	HAMILTON - TWISSELMAN, HWY I-5 [HIST]	COTTON	35 43.922	119 44.538
KERN		6/4/00	Y	600	HAMILTON - KERN NWR NESTING FAILURE, FORAGING [HIST]	CATTAIL	35 44.48	119 35.102
KERN	6,400	5/11/00	Y	3,000	HAMILTON - KERN NWR	CATTAIL	35 44.018	119 35.102
MERCED		6/20/00	Y	15,000	KING - AG SLOUGH MERCED/STANISLAUS CO LINE W OF HILMAR E SIDE SAN JOAQUIN	BULRUSH	37 24.492	120 58.160
MERCED		5/15/00	Y	6,000	HAMILTON - MERCED NWR TOUR RTE FIELD #3 SECOND BREEDING	WHEAT/THISTLE	37 10.315	120 36.047
MERCED	29,000	5/15/00	Y	8,000	HAMILTON - MERCED NWR FIELD #5 SECOND BREEDING		37 12	120 37
MONTEREY		6/27/00	Y	300	SHEARWATER - NE OF SAN JUAN / CRAZYHORSE RD INTERSECTION AT POND (PLUS ABOUT 200 FLEDGLINGS) [HIST	CATTAILS	36 46.378	121 36.044
MONTEREY		5/9/00	Y	300	BANKS - FORT HUNTER-LIGGETT NW POND AT JUNCT MISSION & NACIMIENTO-FERGUSON	CATTAIL/ WILLOW	36 0.49	121 14.3
MONTEREY	600	5/9/00	N	0	BANKS - SAN ARDO [HIST]	DESERT OLIVE		

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 5
LATE SEASON BIRDS

)UNTY	Total	late/Nesting	Number	Observer	Location	Substrate	Latitude	Longitude
PL ACER	1,500	5/4/00 Y	1,500	DEHAVEN - 0.5 MI E BREWER RD /0.5 MI S NICOLAUS RD DRY PASTURE W/ LEVEES		H. BLACKBERRY	38.53.345	121.26.464
RI VERSIDE	10,000	5/12/00 Y	10,000	HAMILTON - HEMET SECOND BREEDING		BULRUSH	33 47.986	117 01.255
SA CRAMENTO	4,000	5/4/00 Y	4,000	DEHAVEN - NATOMAS BASIN CONSERVANCY PROPERTY. NATOMAS LEVEE RD 1.5 MI S JUNCT RIEGO RD [HIST 1960-1999] TOTAL OF 5		H. BLACKBERRY	38 43.869	121 29.658
SA N BENITO		5/2/00 N	150	FITTON - RT 25 BEARVALLEY 0.5 N LA GLORIA			36 34.194	121 10.902
N BENITO		5/2/00 N	500	FITTON - SAN JUAN RD 1.5 MI W SAN JUAN BAUTISTA BI DIRECTIONAL FLYING FLOCK, COLONY PRIVATE LAND			36 51.589	121 33.105
N BENITO	1,050	5/28/00 Y	400	FITTON - SAN JUAN RD 2.5 MI NE SAN JUAN BAUTISTA COLONY LN OPFF DUNCAN AVE PO BOX 'FOSTER'S 400' SAN BENITO RIVER		CATTAIL	36 51.6036	121 29.941
SA N DIEGO	700	4/30/00 Y	700	HESTER - CAMERON CORNERS POND HWY 5 BUCKNER SPRINGS TURNOFF TO HWY 94 LEFT INCUBATING [HIST 1997-1999]		CATTAIL	32 37.666	116 28.083
SA N LUIS OBISPO		5/29/00 Y	500	STILES - CAL POLY PONDS W OF CUESTA		BULRUSH	35 19.76	120 44.91
N LUIS OBISPO		5/10/00 N	0	FITTON - CRESTON RD 2.2 MI E OF S EL POMAR RD OAK GRASSLAND CONVERTED [HIST]		VINEYARD	35 34.117	120 34.742
N LUIS OBISPO	501	5/10/00 N	1	FITTON - RT 58 5.0 MI W SODA LAKE RD MALE		CATTAIL	35 30.772	120 12.617
SA NTA CRUZ	100	7/26/00 Y	100	BULGER - WADDELL CREEK MARSH MOUTH HWY 1 [HIST 1999]		CATTAIL	37 5.69	122 19.67
ST ANISLAUS	2,000	6/20/00 Y	2,000	HAMILTON - AG SLOUGH ON MERCED/STANISLAUS CO LINE NEAR DENAIR		BULRUSH	37 28.92	120 58.282
SU TTER		7/16/00 Y	6,000	MOORE - WILD RICE A; HWY 113 5.32 MI TO ROBBINS ALL RICE FORAGING/HAY FIELDS		WILD RICE	38 56.522	121 40.835
TTER		7/16/00 Y	6,000	MOORE - WILD RICE; HWY 113 4.2 MI N OF ROBBINS FLEDGLINGS / FLIGHTLINGS ALL		WILD RICE		
TTER	19,500	7/18/00 Y	7,500	HAMILTON - SUTTER NWR TRACT 20.1		CATTAIL	38 59.96	121 39.48
TE HAMA	0	6/21/00 N	0	HAMILTON - GAY CREEK HIST]		H. BLACKBERRY	39 47.886	122 12.269
TU LARE	12,000	4/30/00 Y	12,000	HAMILTON - (DEHAVEN - HWY 168 GREG TE VELDE JUNCT RD 56 / AVE 168 (LATE SEASON		WHEAT SILAGE	36 5.47	119 27.1

TRICOLORED BLACKBIRD April 21-24, 2000 SURVEY
APPENDIX 5
LATE SEASON BIRDS

COUNTY	Total	late/Nesting		Number	Observer	Location	Substrate	Latitude	Longitude
YOLO		7/15/00	N	0	HUNTER - DAVIS SEWAGE PONDS		CATTAIL		
YOLO		6/15/00	Y	100	CONNOR - CONAWAY RANCH		H. BLACKBERRY	38 36.238	121 42.670
YOLO		6/13/00	Y	2,000	HAMILTON - SUNSWEET 2ND COLONY AT LOCATION [HIST?]		CATTAIL	38 37.162	121 57.756
	2,100								
TOTAL	**175,971**				**LATE SEASON BIRDS**				

I made the following assumptions:

1) Successful nests plus fledging to independence takes a female 40 days.

2) To quantify time taken when nests are lost to rainfall and windstorm I counted from the beginning of nesting to the event. To determine the initiation of nesting, I determined the day the first egg was laid and added 5 days for nest building.

3) Losses to Black-crowned Night Herons are mostly predation upon eggs. To determine the cost of these losses I took the nest-building interval and added half the incubation period (11 da) or about 10 days.

4) Loss to coyotes and raccoons, which are nestling and egg predators that continue to hunt until fledging, is, on the average, 25 days.

From estimated values (Table 3), there were fledglings produced by 67.95% of the population.	=	127,662
That makes an estimate of 100 % of the whole fledgling Population	=	179,046
We (Cook et al. 1993) estimate fledgling annual survivorship at 1/3 X 179,046 yearlings entering the 2001 season	=	59,692
I estimate annual survivorship of 162,000 adults at 1/2 after Orians and Beletsky's (1989) studies of Washington state redwing adults in 2000	=	81,000
If annual adult survivorship were 70% this figure would be	=	[113,400]
These figures predict the 2001 adult breeding season population will be	=	140,692
Protected by FWS buyouts, 21,500 fledglings	=	7,166
Without buyouts the projected 2001 estimate would be		
At 70% adult survivorship this figure is	=	[173,000]
Without the buyouts and 70% adult survivorship	=	[165,834]

These numbers are simulations, based upon hypothetical survivorship information for another species. Any suggestion that they predict 2001 populations would be unwarranted.

Riverside County created wetland. The Hemet colony was occupied as soon as habitat planted to bulrushes in 1993 developed to partial maturity late in the 1994 season. By 1997 the planting was mature and hosted most of the tricolors known to inhabit southern California (Bowen and Hamilton, pers. obsns.). Between 1997 and 1999 management actions changed the basic characteristic of the Hemet habitat by burning the bulrushes and removing most of the bulrushes, temporarily deleting its current value as tricolor habitat. In 1999 this colony was located in a smaller research marsh unaffected by management actions. It recovered by the 2000 breeding season a substantially smaller area was available for nesting.

Toledo Pit (Kern County). This water district holding pond has consistently accommodated large tricolor colonies since first observed in 1995. In 1999 a large (35,000) flock of tricolors found the pond empty in late April. By the time the pond was flooded on May 1 they had moved (Hamilton et al. 1999).

Sacramento County. Collapse of the huge Sacramento County breeding population was occasioned by deliberate habitat destruction, planting of vineyards and other forms of development (Beedy pers comm., Cook, pers, comm., DeHaven pers. comm.).

Oneill Forebay (Merced County). The decline of highly productive settlements in the Himalaya blackberries at O'Neill Forebay (Merced County) from 1994 conditions followed watercourse changes there and loss of vigor by the blackberry plant nesting substrate.

Producers Dairy (Fresno County). The Producers Dairy colony has variously suffered attempts to incidentally and deliberately (scaring devices, elimination of a cattail marsh) eliminate tricolor habitat or conditions. Given its situation near a large alfalfa foraging area it probably will remain an initial settlement site.

Sunsweet drying yard (Yolo County). This colony is typical of industrial colony sites at gravel pits, prisons and smaller sewage facilities throughout California. Its small size (< 3 acres) limits colony size. Created in 1994, it was first colonized after volunteer cattails matured in 1997. A nearby rice grower who lost some sprouting rice to the adjacent colony prevailed upon the parent company, Sunsweet to disk the cattails in the winter of 1997-1998. Regrowth occurred and it was again colonized in 1999 and 2000, an outcome the grower reluctantly agreed to. The fate of this highly productive colony depends upon the outcome of continuing negotiations.

Silage. In 1994 all silage colony birds were protected by buyout, private agreement and protection of a colony in silage planted by private parties on federal land. In intervening years until 1999 no protection was afforded and large colonies were wiped out before the census. The apparent decline in the number of silage nesting birds at the time of the Census may reflect colony destruction rather than a failure to settle silage. The fate of all silage colonies depends upon the fate of buyout policy. No unprotected silage colony produced any fledglings in the 1990s. Management of planting dates and crop varieties (DeHaven 2000) is not likely to change the negative outcome for tricolors for this winter planted crop.

Merced County. The surge of tricolor numbers in Merced County between 1999 and 2000 (Table 2) is one of several year to year changes, the nature of which seem to preclude effective sampling of overall abundance by local sampling schemes. Even sampling of colonies and their size as widely as in one of the major valleys of Central California (San Joaquin Valley or Sacramento Valley) will not produce an estimate accurately predicting the results of a global census. To verify this conclusion, compare Sacramento Valley and San Joaquin Valley contributions to the sum of the censuses for all years.

Merced NWR. Changes were largely (55%) the result of agricultural practices incidentally benefiting tricolors. Thistles were encouraged to mature after tricolors settled in them. Prompt initiation of active management by Dennis Woolington when tricolors settled enhanced the productivity of these colonies. These actions included timely irrigation of the thistle crop, making possible a secure second nesting attempt.

Rice. Extending from the data showing that a tricolor colony utilizes 25,000 acres of rice (Figure 2) and assuming 514,000 acres of California rice (Ag Census of California, 1997), fully utilized rice could accommodate as many as 20.6 tricolor megacolonies. The difference between this number and observations suggests that several additional colonies could be accommodated in rice country if there were appropriately situated nesting sites. However, Delevan Tract 17 has been a reserve summer [illegible]

During the brief interval of my association with this species (9 years) it has been reduced from a prominent feature of the valley and foothills landscape to an irregularly encountered species. Causes of loss of colony sites and foraging habitat are evident and overall causes of tricolor declines in abundance are known. Remedies are equally apparent. Maintenance of populations without habitat will be a policy with negative consequences. This report of waxing and waning of successful reproduction is an account of colony surveillance and does not necessarily address the causes of tricolor decline.

NAME	ORGANIZATION	ADDRESS	e-MAIL	PHONE	COUNTY
AIRD, BRUCE	SEA & SAGE AUDUBON		baaird@earthlink.net		ORANGE
ALLEN, JACK	KERN NWR	KERN NWR PO BOX 670, DELANO CA 93216	Jack_Allen@FWS_Gov	661-725 2767	KERN
ANDERSON, JOHN		21740 CO RD 88, WINTERS CA 95694		530 662-4570	YOLO
BALDWIN, SY	USFS	PO BOX 162 LONG BARN CA 95335 0162	sbaldwin@fs.fed.us	209-586-3234	CALAVARAS
BANKS, JIM	MOCKINGBIRD RIDGE ASSOC	50880 PINE CANYON, KING CITY CA 93930	jhbanks@inreach.com		MONTEREY
BARBER, D					SAN DIEGO
BARNES, BOB	CALIFORNIA AUDUBON	PO BOX 953, WELDON CA 93283	bbarnes@lightspeed.net	760-378-3044	KERN
BEEDY, TED	JONES & STOKES ASSOC, INC	2600 V ST, SUITE 100, SACRAMENTO CA 95818 1914	tedb@jsanet.com	916-737-3000	COLUSA
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TRICOLORED BLACKBIRD ITINERANT BREEDING IN CALIFORNIA[1]

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Abstract. To evaluate the abundance of Tricolored Blackbirds (*Agelaius tricolor*), the schedule of breeding throughout the Central Valley of California was determined in four years (1992–1994, 1997). By the end of April in 1994, all observed Tricolored Blackbirds were in the immediate vicinity of active breeding colonies. Only one colony of 600 birds was established in the Sacramento Valley north of Sacramento County. During late May and early June, more than 170,000 individuals settled in the Sacramento Valley, while attendance at colonies in the San Joaquin Valley was declining. Most breeding birds colonizing the Sacramento Valley in May and June probably already had completed nesting efforts elsewhere. This suggests that Tricolored Blackbirds are itinerant breeders. Surveys, conducted after initial settlement and before substantial movements from one breeding area to another occur, have the potential to estimate overall numbers. Inclusion of late season breeding colonies in estimates of overall abundance would result in substantial overestimates of the global population. Local and regional declines in the number of breeding Tricolored Blackbirds of an order of magnitude or more resemble population collapses but probably are attributable to itinerant breeding.

Key words: abundance, Agelaius tricolor, *distribution, itinerant breeding, migration, philopatry, Tricolored Blackbirds.*

INTRODUCTION

This study identifies breeding season movements and estimates changes in the global abundance of breeding Tricolored Blackbirds (*Agelaius tricolor*) between 1994 and 1997. A 1992 survey of colonies throughout the geographic distribution of this species produced evidence that Tricolored Blackbirds nest again in the same year at different localities. This pattern, called itinerant breeding, was first reported for Red-billed Quelea *Quelea quelea* (Ward 1971, Jaeger et al. 1986), and is implicated for the Passenger Pigeon (*Ectopistes migratorius*) and some other pigeons (Bucher 1992).

If Tricolored Blackbirds are itinerant breeders, some or all late season colonies may include individuals observed nesting earlier elsewhere, exaggerating estimates of overall abundance. To evaluate this possibility, the breeding schedule for all colonies that could be located throughout the geographic range of the species was determined again in 1993 and 1994, and sampled in 1997. This analysis focused upon the Central Valley of California (Fig. 1) where most Tricolored Blackbirds nest. Sampling of the distribution and abundance was facilitated by the relatively small geographic distribution of the Tricolored Blackbird breeding range, mostly lowland cismontane California, and their conspicuous colonial nesting habits.

The status of Tricolored Blackbirds has been analyzed several times, prompted by reports of declining numbers and local population collapses (Neff 1937, DeHaven et al. 1975a, Beedy et al. 1991). Numbers, distribution, and movements of Tricolored Blackbirds between 1931 and 1936 were evaluated and interpreted by Neff (1937, 1942), who observed the largest colony ever reported, over 300,000 individuals, in a Sacramento Valley rice growing area. Orians (1961) reported colonies of more than 100,000 individuals, also near rice cultivation in Yolo and Colusa Counties, California, in 1959 and 1960. DeHaven et al. (1975a), resurveying these same areas, found no colony larger than 30,000 birds between 1968 and 1972. All investigators have found striking differences between years in the number of birds inhabiting parts of the Sacramento Valley. For example, between 1969 and 1973, DeHaven et al. (1975a) found as few as 1,000 and as many as 57,000 nesting Tricolored Blackbirds in Colusa County. Hosea (1986) found only 2,700 tricolors in Colusa County in 1981 and 1982, and none in Glenn County. Natality and mortality alone cannot account for

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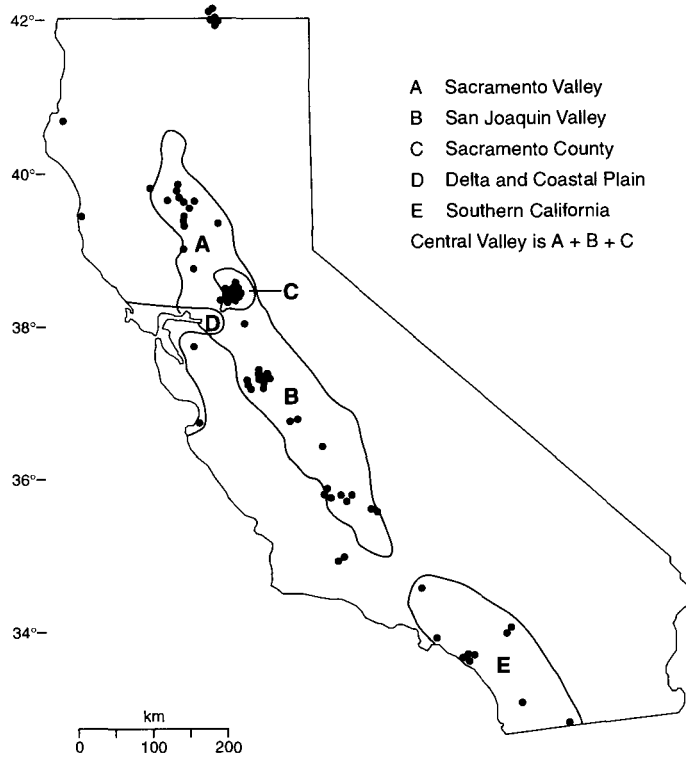

FIGURE 1. Geographic regions monitored for Tricolored Blackbirds. Breeding locations in 1994 (n = 74) are shown by dots.

fluctuations in abundance of this magnitude. Birds either were overlooked or were elsewhere. None of these and other historical evaluations of overall Tricolored Blackbird abundance and population changes considered the possibility that birds counted at different times and places duplicated individuals seen and counted elsewhere.

Tricolored Blackbirds winter in the San Francisco Bay Delta and along the central California coast from Monterey to Mendocino County (D, Fig. 1), the San Joaquin Valley (B, Fig. 1), and in Southern California (E, Fig. 1) (Neff 1937). In March and April they move from these wintering areas to breeding sites throughout the valleys and foothills of cismontane California and southern Oregon.

DeHaven et al. (1975a, 1975b) evaluated Tricolored Blackbird philopatry. Unless Tricolored Blackbirds are regionally philopatric, local and regional surveys cannot track changes in abundance. Of 33 Tricolored Blackbirds banded as nestlings and recovered later at breeding colonies, 13 were found within 10 miles (16 km) of the banding site. The rest were recovered elsewhere, nesting up to 225 km from their hatching site (DeHaven et al. 1975b). It thus appeared that some Tricolored Blackbirds were philopatric but most were not. DeHaven et al. (1975b) did not consider the possibility of a philopatric circuit.

METHODS

Major geographic regions reported here are identified in Figure 1. Breeding colonies were identified throughout the Central Valley during the four years of this study. The search was initially directed by Beedy et al.'s (1991) summary of all nesting records.

In 1994, a two-day survey of Tricolored Blackbirds was sponsored by the National Audubon Society and the California Department of Fish and Game (NAS/CF&G Survey). To limit errors in estimation based upon movement of birds and possible duplicate counts of the same individuals, the estimate focused on the interval

22–24 April. Participants estimated both numbers of birds at colonies and flocks not associated with colonies. In this summation of these data I have included Tricolored Blackbirds settled at colonies after April 23, whether or not colonies were observed then. Later observations add to completeness because the timing of nests within colonies can be determined and the schedule of earlier activity inferred. These inferences require correction for the proportion of nests active when the colony was observed. For example, a colony where adults were feeding nestlings on 1 May must have been present on 23 April. However, the number of birds in such cases was assumed to be only at least the number of nests active and feeding nestlings as of the date of observation.

Additional colonies were located by driving roads throughout the Central Valley and surrounding foothills and investigating all Tricolored Blackbird activity during the breeding season. In addition, collaborators throughout the geographic distribution of this species reported their observations. National Wildlife Refuge (NWR) biologists helped by providing continuity of coverage at their respective locations throughout most of the length of the Central Valley. I was able to simultaneously monitor Tricolored Blackbird activity at and in the vicinity of Sacramento, Delevan and Colusa NWRs in the Sacramento Valley, and San Luis and Kern NWRs and Mendota State Wildlife Refuge in the San Joaquin Valley. Owners of private properties contacted in 1992 and 1993 also reported Tricolored Blackbird activity at colonies in 1994 and 1997. This network produced an increasingly complete seasonal record of distribution, abundance, and schedule during successive years. In all years of this study Cook (1996) independently surveyed Tricolored Blackbirds in Sacramento County (C, Fig. 1), identifying the number and schedule of adults attending colonies there.

Data and analysis here emphasize 1994 and 1997 because procedures and information obtained earlier developed our ability to locate Tricolored Blackbird colonies in the Central Valley and to accurately estimate their stage of development. All surveys were conducted on 23 April (1994) and 26 April (1997) or on the preceding and following day. From 5% (1994) to 27% (1997) of the population that could be located were observed outside the Central Valley. After identifying active colony sites in 1992 and 1993, I revisited all of these sites at least monthly throughout the 1994 breeding season. The effort in 1994 included full time observation in the field for 30 days before breeding was initiated and continued until no more active nests could be located. In 1997 most effort was allocated to determining the location and abundance of birds at the time of the April survey, and the San Joaquin Valley was more heavily sampled than the Sacramento Valley.

Colony size was estimated during the breeding season by entering active colonies to determine the stage of nests and nest densities and to map the area used for nesting. At large colonies (> 10,000 birds) I estimated number of nests based upon linear transects. Transects are an essential component of accurate numerical estimates of colonies because at certain colonies some, many, or all nests are lost to predators or for other reasons. Thus, there may be more nests of the season within a colony at the end of the season than there were females present at any time during that season. Breeding season transects facilitate estimating the number of failed and active nests and identify the proportion of nests currently attended by adults. Twenty to 50 nests were marked along transects, and several transects were established in some large colonies. These transects provided information about the timing of nesting activities within colonies. The area occupied by nests was mapped and dimensions were measured in the field with a tape or wheel.

After the breeding season ended I re-entered colony sites to sample the number of nests more extensively along transects across the full width of colonies, refining initial estimates of density and determining their spatial configuration. Attendance values cannot be determined from these post-season measures, but the dimensions of colonies and the number of nests present during the breeding season can be accurately defined without disturbing breeding birds.

Estimates of the number of breeding females per colony were based upon the number of nests, then adjusted to include males by multiplying by 1.5 (Lack and Emlen 1939, Orians 1961, Payne 1969) to reflect the reported degree of polygyny of this species, i.e., it is a convention.

To identify when the first eggs were laid at colonies, I subtracted 12 days from the date of first hatching. I assumed a schedule of three

days for nest building (Collier 1968), three or four days for egg laying, 11 days for incubation, and nine days prefledging from the hatching of the first nestling until the first chick will jump from the nest when disturbed. The postfledging interval of about 15 days is spent in creches in or within a few km from colonies. A successful nesting cycle can take as little as 42 days. The stage of development of some colonies was determined by observing mud plastering of nests, which occurs about two days prior to laying of the first egg (Collier 1968). Flocks of fledglings appear 25 days after the first egg (Payne 1969).

At some colonies nest initiation continued for several weeks and at some locations there were additional pulses of nest establishment, indicating renesting or additional settlement. I identified late nesting cohorts at colonies as additional independent breeding efforts when nest initiation continued or commenced more than 10 days after initial egg laying or if there was evidence for a new pulse of nest establishment.

Colonies were considered separate when they were physically separated from other colonies and were initiated on an independent schedule. Himalaya blackberry (*Rubus procerus*) settlements were considered to be only one colony if adjacent but not contiguous patches of these brambles were the nesting substrate. At some locations I would otherwise have identified several colonies within sight of one another in a single pasture.

RESULTS

LOCATION OF COLONIES

Collaborators and I located 112 different colony sites between 1992 and 1994, including 75 colonies in 1994 (Hamilton et al. 1995; Fig. 1). There were an estimated 332,000 Tricolored Blackbirds observed or inferred to be at colonies in northern California on 23 April 1994. In addition, Survey personnel and I observed about 37,600 birds not then settled at colonies. From late March through 1 July 1994 and 1997, I estimated the size and timing of colony settlement throughout the Central Valley. Season-long observations in 1994 located over 600,000 breeding adults, far more than the number of birds estimated to be living at the start of the breeding season. The difference between the total seasonal breeding effort and the 23 April census could be the result of errors in estimation, failure to locate birds at census time, second and additional breeding attempts, or some combination of these effects. Based upon measures of the number of nests at colonies after the breeding season, I estimated overall error of initial estimates of breeding densities at no more than 15%, the maximum error identified by any post-season nest count at any colony.

A large proportion of all observed Tricolored Blackbird nesting effort occurs in relatively few colonies. In 1992, 1993, and 1994, the 10 largest nesting colonies included 71%, 63%, and 60%, respectively, of all breeding birds located by all observers, the declining proportion reflecting increasingly complete coverage.

Second broods. Because the analysis was based upon the breeding effort for the entire breeding season, it was possible that I would observe second broods at some locations. I observed no more than an estimated 39,200 birds nesting as possible second successful broods at sites where they initially nested in 1994. Further nesting efforts following nest failure at additional sites may account for all of the nesting observed in the Sacramento Valley north of Sacramento County.

If the subsequent broods accounted for the difference between the estimate on 23 April 1994 and that observed for the season, the later nesting effort must have been by birds that had nested at other locations earlier in the season. To further evaluate this possibility I analyzed the schedule of colony establishment (Fig. 2, and below).

Movements from wintering areas. The Delta, an alluvial plain adjacent to Suisun Bay and the confluence of the Sacramento and San Joaquin Rivers, separates the western Sacramento Valley from the San Joaquin Valley (Fig. 1). This is the wintering area for tens of thousands of Tricolored Blackbirds. Field surveys showed that there were no Tricolored Blackbirds there on 1 April 1994 and 1997. Throughout the late winter (February, March) large flocks were found in the San Joaquin Valley, especially in Merced County.

Coinciding with departure of Tricolored Blackbirds from wintering areas in late March, there were substantial settlements of breeding colonies in the San Joaquin Valley. Association with cattle feedlots and dairies near sites where breeding colonies will be established follows the exodus from the wintering areas. There also are early movements from the Delta to Sacramento

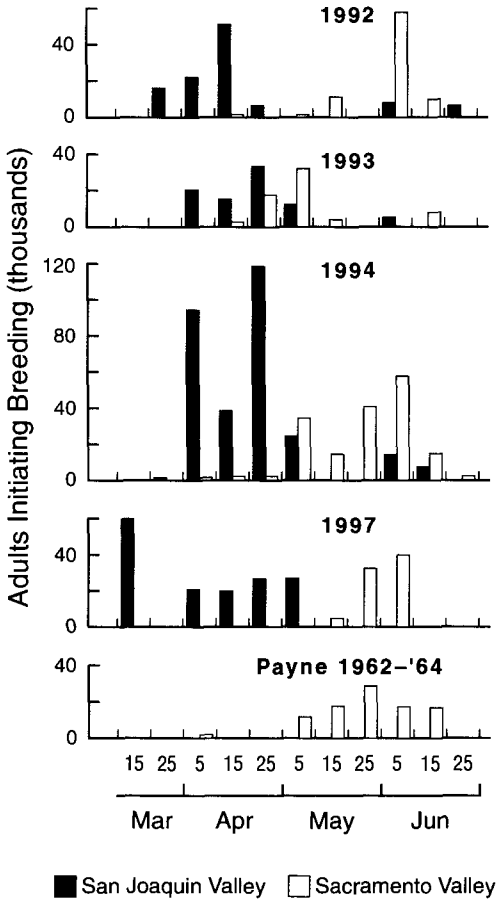

FIGURE 2. Schedule of colony establishment. Number of Tricolored Blackbirds initiating breeding by laying their first egg during 10-day intervals in the Sacramento Valley and the San Joaquin Valley—plus Sacramento County. Data from Payne (1969) are his estimated summed observations for the three years 1962–1964.

County. Initiation of breeding in the Sacramento County area was about 10 days later than in the San Joaquin Valley, but over a month before most breeding Tricolored Blackbirds arrive and settle in the northern Sacramento Valley. Substantial nesting colonies were not observed in most lowland areas of the Sacramento Valley north of Sacramento County until May. Colonies continued to be initiated there throughout the first half of June (Fig. 2).

Tricolored Blackbirds initiated breeding in the San Joaquin Valley as early as mid-March, and all birds are settled at some colony site by the end of April. Additional large settlements, such as the late 15,000 bird cohort at a colony on San Luis NWR (first egg 9 May), may have been birds that lost nests to agricultural operations, including harvest of silage from barley fields. In 1994, silage fields contained 81% of an estimated 247,000 Tricolored Blackbirds observed nesting in the San Joaquin Valley in April. Both lodging and silage harvest resulted in the loss of about 40% of all nests in these agricultural habitats, a number that would have been 60% without protective intervention.

The Sacramento Valley also was covered county by county on 23 April 1994 by the NAS/CF&G Survey and by me in weeks before 1 May without locating any breeding Tricolored Blackbirds. In the Sacramento Valley in May and early June I visited known colony sites at 21-day intervals throughout the breeding season (1 April–1 July). There were four additional observers resident at different locations in the Sacramento Valley. Coverage there late in the season (late June, July) was hampered by access restrictions resulting in limited success in reaching colonies. Uncounted birds included two large colonies in Glenn County and two colonies in Yuba County, all active during June 1994. Thus the 170,200 birds observed in this late season coverage of the Sacramento Valley (Fig. 1) was a less complete sample of the breeding population than that of the San Joaquin Valley and in Sacramento County.

NONBREEDING BIRDS DURING THE BREEDING SEASON

Interpretations of the origin of birds arriving in the northern Sacramento Valley in late May and June depends upon whether there were substantial numbers of nonbreeding birds elsewhere before breeding birds arrived in the Sacramento Valley. The network of observers could locate less than 1,000 birds not associated with colonies during May 1994, except for briefly occupied dispersal centers, resting places from which foraging flights move radially to and fro, and all-male foraging flocks near colonies under incubation. Throughout incubation only females are present at colonies during the day. Males return late in the afternoon. Male attendance picks up at colonies after hatching when they participate in provisioning chicks.

Nonbreeders unattached to colonies. On 22 April 1994, I found one 10,000 bird mixed-sex flock of Tricolored Blackbirds foraging on rip-

ening barley heads in the San Joaquin Valley (Kings County). They were moving to and from a nonbreeding dispersal center. A 15,000 bird assemblage was observed dispersing from a base in Himalaya blackberries on the Arena Plains near Los Banos (Merced County, San Joaquin Valley) on 22 April. A small colony of about 600 birds subsequently nested there. At that time the colony at San Luis NWR, 10.2 km away, contained about 50,000 birds and was expanding steadily to reach its greatest estimated size of 105,000 birds early in May. The survey located in addition about 9,500 birds that could not be assigned to breeding colonies on 23 April. By 1 May these nonbreeding flocks were gone and I could locate no birds except those in or near colonies.

Nonbreeding birds associated with colonies. Most nonbreeding birds during the breeding season are closely associated with breeding colonies. In all four years of this study I observed some sites where males settled, sang, and displayed, but attracted only a few females or none at all. During settlement, many colonies include thousands of peripheral males that do not attract females and who abandon their territories after egg laying is completed.

At the San Luis colony (Merced County, San Joaquin Valley) about 20,000 mixed-sex nonbreeding individuals were associated with the colony following the loss to lodging of 37% of the silage substrate of 44,000 nests. In the following two weeks these nonbreeding birds disappeared and an additional nesting effort of about 20,000 birds at that colony developed, perhaps returning to breeding status birds that had lost nests to blowdown. These birds were distinguished from previous settlers by the ongoing mapping effort, which allowed me to closely estimate the number of nests added at that time.

Individuals more commonly abandon the vicinity of colonies after nest losses so there are sometimes only a few individuals commuting to foraging areas to provision the remaining nestlings at colonies where tens of thousands of birds built nests and laid eggs. I observed no desertion of colonies even following nearly complete loss of nests to predators.

Transient nonbreeders. There were occasional (n = 9) small nonbreeding flocks of < 100 birds in the Sacramento Valley rice districts in May 1994, prior to colony settlement there. Arrival of large settlements in a matter of a few days was thus surprising and incompatible with ongoing observations of local abundance. Birds arriving at colonies in Colusa and Glenn Counties were associated with nonbreeding aggregations immediately preceding settlement of breeding colonies. These settlements function as if they were colonies in the sense that flocks of birds used the site as a central place during the day, with foraging flocks dispersing from and returning to them. The breeding birds colonizing cattails at a quarry in Glenn County first arrived from the south in a steady procession on 8 June 1994. Males preceded females in the forenoon and were followed by females that afternoon. Male display and female nest building were underway by nightfall. The source of these birds may have been the failing nesting colonies at the Capitol Outing Club, 36.9 km to the SE in Colusa County, where predation completely eliminated the reproductive effort of 60,000 adult Tricolored Blackbirds at two colonies between 30 May and 17 June.

DISCUSSION

INITIAL BREEDING

There is an initial breeding effort beginning from mid-March through early April throughout the California distribution of Tricolored Blackbirds. Early April breeding in some years includes small colonies to the north, both in the Sacramento Valley and in lower elevation montane marshes (Fig. 2). Colonies in April were initiated throughout the month. The bulk of the April breeding effort was in the San Joaquin Valley and in Sacramento County. About 50 days after the initial settlement of colonies in the San Joaquin Valley, a new wave of initial settlements occurred, mostly in the Sacramento Valley (Fig. 2).

The 170,200 birds observed arriving to begin nesting in the Sacramento Valley in May and June 1994 and influxes in other years (Fig. 2) of this study may be individuals which had previously made nesting attempts in the San Joaquin Valley or in Sacramento County.

Renesting. Birds initiating nesting at a site less than 45 days after initial egg laying may have been producing second broods following failure of their initial nests at the same site or at some other site. A nesting effort more than 50 days after initial nesting could be renesting by

individuals that already had nested successfully that year.

Many nesting attempts fail because of predation, cold or rainy weather, or as a result of agricultural operations, especially various forms of haying. These activities produce potential recruits for additional nesting efforts. Payne (1969) found a female Tricolored Blackbird laying again 10 days after losing a nest with eggs. In this case the second nest was a short distance away, but Payne's observation demonstrates the potential for prompt renesting at a second location. Because nests at some colonies fail at a high rate, any bird observed initiating nesting after 15 April could be an individual which had lost a nest at that site or elsewhere. A thorough canvas of colonies including the entire breeding season may thus identify far more individuals initiating nesting than the number of adults actually composing the population.

ITINERANT BREEDING

At the end of an intensive five-year study (1931–1936), Neff (1937) concluded that the Tricolored Blackbird is "... sheerly and illogically erratic in its seasonal movements and activities." DeHaven et al. (1975b) reported Tricolored Blackbirds to be nomadic and erratic in their breeding. Results of this study identify one basis for those perceptions. Transects, even as long as 100 km, may yield results leading to misinterpretation of trends in the overall abundance of this species if they are done when the population is elsewhere. This was the case for a part of the geographic area covered by the annual surveys. In late April there were virtually no breeding birds in the Sacramento Valley north of Sacramento.

In this study nonbreeding Tricolored Blackbirds were not seen during the breeding season except at colonies and their vicinity or at dispersal centers. I conclude that later settling individuals had previously nested in the San Joaquin Valley or in the Sacramento County area. The evidence for this conclusion is: (1) The wintering quarters in the Delta and along the coast were largely vacated by 1 April; (2) Few (about 37,000) birds could be found on 23 April 1994, except those associated with colonies; (3) In 1992 and 1994 large numbers of breeding birds initiated nesting in the Sacramento Valley during May and June (Fig. 2), but not in 1993 (33,000). The Sacramento Valley population observed in 1994 cannot be derived demographically from reproduction by and survival of birds present there in 1993; (4) The timing of breeding of the birds observed in the Sacramento Valley followed by approximately 50 days the breeding effort in the San Joaquin Valley and Sacramento County.

HISTORICAL COMPARISONS

Has the pattern of San Joaquin Valley to Sacramento Valley breeding season movements reported here been the same during the past century? Reviewing observations of Tricolored Blackbirds by region and schedule based upon all available records provides scant additional evidence for evaluation of this possibility. Neither Neff (1942) nor DeHaven et al. (1975b) assessed movements of adults during the breeding season because their analyses were based upon recoveries of birds banded as nestlings or trapped outside the breeding season. Nevertheless, Neff (1937) had the impression that Tricolored Blackbird "colonies nesting early in the season may subsequently change their habitat, and some of them may nest again at different localities." Thus, while I identified the possibility of itinerant breeding by Tricolored Blackbirds in 1992 and developed additional pertinent evidence in 1993, 1994, and 1997, Neff inferred the concept without naming it in the 1930s.

Neff's (1937) geographic coverage differed from year to year, and reevaluation of his observations neither supports nor rejects the idea of regional within breeding-season movements. He found large numbers of birds in Glenn County and elsewhere in the Sacramento Valley (Table 1) and relatively few Tricolored Blackbirds in the San Joaquin Valley. However, he did not initiate searches for breeding birds until May in most years of his study, and by mid-May most of the nesting activity I observed in the San Joaquin Valley was completed. Orians (1961) and Payne (1969) noted that rice country (Sacramento Valley) breeding colonies nested later than those in the interior Coast Range foothills to the Sacramento Valley, but they did not comment upon the source of the later nesting birds. The numbers they report for the respective areas show that the foothill birds observed cannot have been the principal source of the rice country birds. DeHaven et al. (1975a, 1975b) made no effort to canvas distribution throughout the breeding season. Indeed, they found far fewer

TABLE 1. Overall abundance of Tricolored Blackbirds for the years 1932–1936 (Neff 1937), 1968–1972 (DeHaven et al. 1975a), 1959 and 1960 (Orians 1961), 1992–1994 and 1997 (this study) by California county. The accounting method used here, highest count for any year, overrepresents abundance in those studies including more than one year because it takes the highest of the several annual estimates during each study. Counts also are not directly comparable because effort to locate colonies and the number of years was unequal in the several studies.

	Number of birds					
	1931–1936	1959–1961	1968–1972	1992–1994 Renests excluded	1992–1994[a] Renests included	1997
San Joaquin Valley						
Fresno	150	—	0	20,200	20,200	2,550
Kern	3,000	—	3,000	71,200	72,325	17,000
Kings	3,000	—	25,000	64,000	64,000	33,000
Merced	87,000	—	26,000	104,700	129,200	13,000
San Joaquin	5,050	—	5,050	14,500	14,500	11,900
Stanislaus	18,750	—	25,300	7,075	7,075	150
Tulare	3,000	—	1,500	50,000	50,000	55,500
Total	119,950	—	85,850	331,675	357,300	133,100
Sacramento Valley						
Colusa	55,500	165,000	57,000	106,825	106,825	—
Glenn	423,000	—	18,500	83,000	83,300	—
Yuba	169,500	87,725	5,250	13,500	13,500	—
Butte	159,000	52,500	25,000	6,500	6,500	—
Yolo	57,000	105,000	31,000	1,775	1,775	—
Total	864,000	410,225	136,750	211,600	211,900	—
Sacramento County	181,500	—	50,915	89,415	111,500	31,350
Grand total	1,165,455		273,515	632,700	680,700[1]	—

[a] These numbers include possible renesting which would not have been included in Neff's survey and possibly not in DeHaven's because they did not revisit and recount colonies throughout the season.

birds in the San Joaquin Valley than are reported in this study (Table 1).

It is not possible retrospectively to determine the extent to which the differences between the results obtained by these investigators and those reported here are due to observation method or are actual differences in patterns of movement. Although differences in search effort preclude close comparisons of trends in abundance, data here suggest that the intensity of the early season breeding effort may be a recent development. The erratic occurrence of Tricolored Blackbirds in the Sacramento Valley may be the consequence of their attraction to favorable breeding conditions associated with irrigation agriculture in the San Joaquin Valley. There were relatively few (n = 20,410) Tricolored Blackbirds in the Sacramento Valley in 1993 (Fig. 2) in spite of a search equal to that of 1992, 1994, and 1997. If breeding at these alternative locations is interdependent and development of suitable conditions in the San Joaquin Valley is delayed, the breeding effort in the San Joaquin Valley could delay or eliminate the breeding effort in the Sacramento Valley. The picture suggested here of Sacramento Valley Tricolored Blackbird breeding is one of a facultative breeding assembly by birds that were both successful and unsuccessful in their earlier nesting efforts elsewhere, especially in the San Joaquin Valley and in Sacramento County.

The entire discussion begs the question of the causes of the ending of the breeding season. Along the Marin coast, August and September breeding often occurs (R. Stallcup, pers. comm.). The issue of fall breeding (Orians 1961, Payne 1969) is not considered here because neither any collaborators nor I observed any fall breeding in the Central Valley. In 1994 the breeding schedule extended from 1 April through 10 June for nest initiation and to 30 July for completion of the breeding cycle. In 1997 egg laying was initiated on 18 March in Tulare County. First eggs were laid as late as 3 July in Yolo County. Any nest in 1994 failing after 3 June ended the spring breeding season for the parents that year. In 1994 only 121,900 birds, 115,400 of them in the Central Valley and 35%

of the estimated population, were known to have initiated breeding by 16 April. An additional 15,000 birds per day, or about 50% of the estimated total population, initiated breeding somewhere during the next 10 days, so that most birds had an opportunity to nest again in the same place or elsewhere after completing a successful nesting effort. The opportunity to nest successfully twice and to have time to reinitiate nesting after loss of nests seems to be an essential feature of the Tricolored Blackbird reproductive strategy.

Local fluctuations in the abundance of Tricolored Blackbirds have been interpreted as responses to local insect abundance (Orians 1961, Payne 1969). Another possibility is that variable local abundance between years is the result of itinerant breeding movements during the breeding season after predators, agricultural operations, and adverse weather destroyed colonies. Flocks may seek suitable habitats at new locations after successfully completing nesting or failed attempts to do so.

One implication of Tricolored Blackbird itinerant breeding is that the low reproductive success in some habitats does not necessarily make these habitats reproductive sinks. Seasonal reproductive success is the sum of all successes. At some threshold level, the metapopulation becomes sustainable, despite seemingly trivial additions from certain habitats, times, and places. Perhaps the Tricolored Blackbird reproductive strategy of colonial breeding depends upon itinerant breeding.

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TRICOLORED BLACKBIRD SURVEY REPORT 2001

Draft

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Introduction

The Point Reyes Bird Observatory (PRBO), under the auspices of Partners in Flight and with support from the United States Fish and Wildlife Service (USFWS), coordinated the 2001 volunteer Tricolored Blackbird survey in the state of California and agreed to document the status and condition of selected breeding sites. Volunteer surveys have until now been coordinated by Bill Hamilton at University of California at Davis, beginning when he first spearheaded the project in 1994 in an effort to monitor the annual distribution and abundance of the Tricolored Blackbird population. In 2001, all work conducted by PRBO was done in consultation with Bill Hamilton. Additional agencies also participating in coordinating this project included the National Audubon Society (Western Regional Office) and California Department of Fish and Game (CDFG).

Ninety-five percent of the world population of Tricolored Blackbirds occurs in California, where they are listed as a state species of special concern (CDFG 2001). Surveys indicate that populations have been rapidly declining for decades, likely due to water diversion, land conversion, and predation by mammals, corvids and Black-crowned Night-Herons (Beedy and Hamilton 1997, Hamilton et al. 1999, Hamilton 2000).

PRBO's objectives for the Tricolored Blackbird project in 2001 were as follows:

1) Coordinate with the USFWS in the identification of the top Tricolored Blackbird locations (at least 5) for potential conservation action. These sites were to be identified using information from recent annual surveys, especially multiple-year use of sites, size of colonies, and potential for enhancement, restoration, and/or conservation opportunities.
2) Document the status and condition of these priority conservation sites for initial potential conservation action.
3) Document the status and condition of known Tricolored Blackbird nesting colonies on private land in order to prioritize these sites according to conservation potential.
4) Coordinate the 2001 Tricolored Blackbird Volunteer Survey and prepare a summary of active colonies.

Status and Condition of Priority Sites

PRBO and the USFWS have identified eight locations that have been very important Tricolored Blackbird colonies. The colonies were selected because of the potential to improve the site through cooperation with the landowner. These sites include many that are not currently managed for blackbirds.

These sites are listed in alphabetical order and not in order of priority. The annual sizes of each of these colonies are presented in Table 1.

<u>Priority Site 1: "Ag." Slough Merced</u>
This site is located in the San Joaquin Valley in Merced County. Latitude and longitude in decimal degrees are 37.4082 and 120.969333.

Ownership:
-Private (probably two land owners, one of which may be the nearby Dairy)
Nesting substrate:
-Bulrush
Habitat size:
-about ½ mile long
Associated foraging habitat:
-Nearby dairy farm
Vulnerability to loss:
-Loss of water
-Removal of vegetation to improve water flow for irrigation purposes (South end had a drag line pulled across it and the vegetation was removed about three years ago)
-Flooding (Site is within the floodplain of the San Joaquin River, and has been under a lot of water during the nesting season)
The site is not in a good location for agriculture or housing
Current management:
-Water comes from the Turlock Irrigation District, and the slough is a drain into the San Joaquin River
Enhancement/restoration options:
-There is room to expand the slough
-Vegetation could be replanted in the area where the drag line was pulled to reestablish vegetation

Priority Site 2: Capital Outing

Capital Outing is located in the Sacramento Valley, in Colusa County. Latitude and longitude are 39.24 and 122.108333. This site is next to Grey Hill Duck Club, and it would be possible to survey both sites at the same time with the understanding that they are managed differently.

Ownership:

-Private duck hunting club with three members,

-Current owner is Lewis Fegoni and manager is Greg Christy

Nesting substrate:

-Cattail

Habitat size:

- ½ section, about 320 acres

Associated foraging habitat:

-Rice fields in all directions within 5 km

Vulnerability to loss:

-Huge colony in the 1950's (120,000-150,000 birds). More recent colony size varied, with 60,000 in 1992, 3000 in 1993, 60,000 in 1994, 80,000 in 1997, 6000 in 1999, and 31,000 in 2000.

-In 1994, there was 100% predation by Black-crowned Night-herons

-Site was drained in 1999

Current management:

-Duck hunting club in the fall, and some fishing in the summer

-Water is pumped by well (about 197 million gallons)

-Club plans to keep water on the property throughout the year for duck nesting and fish production.

-Any draining will not be complete, and only for a short time

Enhancement/restoration options:

-May be a need to reduce take of Tricolored Blackbirds by rice farmers when shooting blackbirds for crop protection

-Take action to reduce predation by black-crowned Night-herons

-Inquire about changes in management from any new owners/managers

Priority Site 3: East Park

East Park is located in the Sacramento Valley, in Colusa County. Latitude and longitude are 39.314933 and 122.518617.

Ownership:

-Bureau of Reclamation

Nesting substrate:

-Cattails/bulrush

Habitat size:

-Three nesting locations around the lake

Associated foraging habitat:

-Unclear possibly oak woodland (Hamilton 2000)

Vulnerability to loss:

-Largest historic site is currently not in use
-Boat use in colony
-Large unregulated campground near colony

Current management:

-The nesting area has been protected, but the surrounding area is managed in a hands off manner for fishing, boating, and camping

Enhancement/restoration option:

-Burn historic site to improve nesting habitat
-Move camp-sites away from colonies
-Restrict boat use near nesting sites during the nesting season
-Tricoloreds should be included in the in the Resource Management Plan for East Park, which is currently being written

<u>Priority Site 4: Grey Hill Duck Club</u>

The Grey Hill Duck Club is located in Sacramento Valley, in Colusa County. Latitude and longitude are 39.22595 and 122.093317. This site is next to Capitol Outing, and it would be possible to survey both sites at the same time with the understanding that they are managed differently.

Ownership:

-Private duck Club

Nesting substrate:

-Cattail

Habitat size:

-1 section, about 640 acres

Associated foraging habitat:

-Rice fields in all directions within 5 km

Vulnerability to loss:

-Predation by Black-Crowned Night-Herons has been a factor

Current management:

-Private duck club in the fall
-Water comes from the irrigation district
-Site belongs to the Water Bank Program (part of the Conservation Reserve Program)
-Water Bank requires water to be stored on the site through July

Enhancement/restoration options:

-Monitor water levels to be sure that water is left on the site until July
-Water Bank is a ten year contract, and must be renewed
-May be a need to reduce take of Tricolored Blackbirds by rice farmers when shooting blackbirds for crop protection
-Take action to reduce predation by Black-Crowned Night-Herons

Priority Site 5: Hemet Sewage

Hemet Sewage is located in southern California in Riverside County. Latitude and Longitude are 33.797333 and 117.019167.

Ownership:

-Public (Eastern Municipal Water District) See website: http://www.emwd.org/waste_water/wetlands.html

Nesting substrate:

-Bulrushes

Habitat size:

-50 acres

Associated foraging habitat:

-Private land; alfalfa

Vulnerability to loss:

-This man-made bulrush wetland was occupied after it was planted with bulrushes in 1993. The site hosted most of the Tricolored Blackbirds in southern California (35,000 in 1994)

-Between 1997 and 1999 it was burned and bulrushes were removed. Colony size was smaller in 1999 and 2000 and located in a smaller area unaffected by management actions

-In 2000 the colony was unsuccessful due to predation by Black-crowned Night-Herons and Great-tailed Grackles (Hamilton 2000)

Current management:

-site is managed as a research facility in the use of marshes for filtering waste water. UC Riverside and other universities are conducting research there

Enhancement/restoration options:

-Response of Tricolored Blackbirds to bulrush planting in 1993 was immediate

-Burning and removal of bulrushes between 1997 and 1999 affected the site's value as habitat (Hamilton 2000)

-The replanting of bulrushes should be investigated

Priority Site 6: Laguna Seca

Laguna Seca is located along the Central Coast in Monterey County. Latitude and longitude are 36.5719 and 121.7689

Ownership:

-County of Monterey

Nesting substrate:

-Cattail/bulrush

Habitat size:

-about 2-4 acres

Associated foraging habitat:

-Grasslands on Fort Ord, grazed by sheep for weed management

Vulnerability to loss:

-Widening of Hwy 68 from two lanes to four lanes, although plans are to move the highway to the north.
-Expansion of the raceway for parking that now overflows into BLM land

Current management:
-Managed as part of a park and campground for Laguna Seca Speedway

Enhancement/restoration options:
-maintain the wetland
-monitor disturbance of the colony during spring use at the raceway

Priority Site 7: O'Neill Forebay

O'Neill Forebay is located in the San Joaquin Valley in Merced County. Latitude and longitude are 37.081667 and 121.023333.

Ownership:
-State Lands

Nesting substrate:
-Himalayan blackberry

Habitat size:
-2-4 acres

Associated foraging habitat:
-Dairy east of I-5
-Nearby alfalfa fields

Vulnerability to loss:
-Colony size was 7500 in 1993. 18% of colony lost in 1994 due to rising water. Changes in water management resulted in a decline in Himalayan blackberry and loss of vigor to the remaining shrubs (Hamilton 2000)
-No Tricolored Blackbirds were observed in 1999
-130 nonbreeding birds observed in 2000
-Birds are nesting in nonnative vegetation that may be mowed for maintenance
-The nearby town of Santa Nella is expanding, and may take over feeding area of tricolors

Current management:
-O'Neill Forebay is a storage basin for water coming from the San Luis Reservoir to the California aquaduct. The Forebay is a popular boating, hunting, and fishing area

Enhancement/restoration options:
-Restoration of a water cycle that is beneficial to the growth of Himalayan Blackberry
-Control fluctuations in water during the breeding season.
-Monitor growth of the town of Santa Nella

Priority Site 8: Toledo Pit

Toledo Pit is located in the San Joaquin Valley in King County.
Latitude and longitude are 36.055 and 119.405333

Ownership:
- -Public land

Nesting substrate:
- -Cattail/bulrush

Habitat size:
- -Unknown

Associated foraging habitat:
- -Private land - alfalfa

Vulnerability to loss:
- -Colony size large in 1994 (50,000 birds) and 1997 (51,000 birds)
- -In 1999, 35,000 birds arrived and found it empty. It did not get filled until the birds had moved on (Hamilton et al. 1999), and none bred there that year

Current management:
- -The site was burned (March-April 2002) as an experiment to improve Tricolored Blackbird habitat
- -A well was put in to supply water to the site

Enhancement/restoration options:
- -Careful monitoring of the population is needed to investigate the impacts of current management

Table 1. Annual Colony Sizes for Tricolored Blackbird Priority Sites (in 2000 number includes only breeders).

	Prior to 1992	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Hemet Sewage				2,000			35,000		4,000	10,000	30
O'Neill Forebay			7,500						0	0 (130 non-breeders)	30
Toledo Pit				50,000			51,000		0	15,000	**
Laguna Seca									1,200	900	2000
Capital Outing	120,000 150,000	60,000	3,000	60,000			80,000		6,000	31,000	0
Grey Hill Duck Club										25,000	8,000
"AG" Slough Merced										15,000	**
East Park	250-20,000	5,000	9,000						500	2,500	**

** Although these sites were most likely surveyed we have not received the data at this time.

2001 Statewide Volunteer Survey

In 2001, PRBO coordinated the Tricolored Blackbird survey in California. A series of web pages were created on PRBO's website to provide the background for the survey, discuss census objectives for 2001, encourage season-long coverage instead of limiting the survey period to just 2-3 days, and provide a map of previously detected colony locations. Season-long coverage is recommended because, if surveys are conducted only during a few days of the season, it is likely that some colonies will be completely missed if depredation or draining occurs prior to the visit date. The main page URL is http://www.prbo.org/Trics.htm.

In addition, this webpage allowed for electronic submission of Tricolored Blackbird colony observations by volunteers. Prior to the breeding season, historic volunteers were each contacted with information on the 2001 survey, to encourage data entry into the interactive online database, and to remind them of the importance of respecting private property.

See Table 2 for summaries of the 2001 statewide survey, including active breeding colony locations and numbers observed. The total number of Tricolored Blackbirds observed at colony sites in 2001 was 142,045. This was lower than the 2000 survey total of 162,000, and possibly reflects the continued decline in Tricolored Blackbird numbers; in 1994 the number was estimated at 370,000 and in 1997 at 240,000 (Hamilton 2000). However, data from some of the priority sites (see above) have not yet been submitted to PRBO for 2001, possibly artificially deflating total numbers statewide. The list of the 10 largest colonies detected in the 2001 survey are presented in Table 3. Not included elsewhere are visits to historic sites where no Tricolored Blackbirds were present in 2001; these are presented in Table 4.

Table 2. Summaries of the 2001 California Tricolored Blackbird Survey.

Site	Number	Ownership	Latitude and longitude (dd)
Butte County			
Lone Tree Road	500	Private?	39.383111, 121.583111
Colusa County			
Grey Hills Duck Club	8,000	Private	39.22595, 122.093317
Acre Farms	5,000	Private	39.22532, 122.09227
Fresno			
Fresno 1	10,000	Private	36.73438, 120.23237
Kings			
Tulare Lake 1	150	Private?	37.92978, 122.73545
Tulare Lake 2	800	Private?	35.83532, 119.71338
Kern County			
Sag Pond Wind Wolves	4000	Public	34.94633, 119.16490
Canebrake Ecological Reserve	300	Public	N/A
North Bakersfeild - Tule Road (1)	750	Unknown	35.625783, 118.980683
SE Unit 1 Kern NWR	1500	Public	35.714883, 119.583653
North Bakersfeild - Tule Road (2)	2300	Unknown	35.631917, 118.963367
NE Unit 1 Kern NWR	6000	Public	35.726003, 119.588833
DCAA Dairy	6000	Private	36.00622, 119.44239
Merced County			
O'Neill Forebay Wildlife Area (N)	30	Public	37.083942, 121.029964
O'Neill Forebay Wildlife Area (S)	40	Public	37.077878, 121.032197
Merced NWR-Crane Field C Unit	3000	Public	37.17, 120.67
Merced NWR-East Dowitcher Unit	6000	Public	37.25, 120.67
Merced NWR-E. Farm Field 3 Unit	30,000	Public	37.17, 120.67
Monterey County			
Old Stage Road	10	Unknown	36.65403, 121.54237
Locke Padden Pond	35	Public	36.69132, 121.80255
Gatehouse Pond	50	Private	36.43862, 121.79500
Old Stage/Zubala Road Intersection	250	Private	36.66012, 121.54673
Pancho Rico Road	1200	Unknown	N/A
Laguna Seca Pond	2000	Public	36.57236, 121.76781
Riverside County			
Hemet Sewage Pond	30	Public	33.797333, 117.019167
San Diego County			
Twin lakes Resort	150	Private	32.62402, 116.61320
Tulare County			
Ave 120 Colony 1	30,000	Private	35.994494, 119.468506
Ave 120 Colony 2	8000	Public	36.006689, 119.479989
Ave 120 Colony 3	15,000	Public	35.999475, 119.472489
Tuolomne/Stanislaus Counties			
Rock R. Rd, Knight's Ferry	550	Unknown	37.762117, 120.559133
Yolo County			
Yolo Quarry	400	Private	38.69191, 121.95388
Total Tricolored Blackbird Numbers	**142,045**		

Table 3. Top 10 Tricolored Blackbird Colonies in 2001 Survey.

Site	County	Ownership	Size 2002	Substrate
Merced NWR-E Farm Field 3 Unit	Merced	Public	30,000	thistle/mustard
Ave 120 Colony 1	Tulare	Private	30,000	silage
Ave 120 Colony 3	Tulare	Private	15,000	silage
Fresno 1	Fresno	Private	10,000	silage
Ave 120 Colony 2	Tulare	Private	8,000	silage
Grey Hills Duck Club	Colusa	Private	8,000	cattails
NE Unit 1 Kern NWR	Kern	Public	6,000	cattails/bulrushes
DCAA Dairy	Kern	Private	6,000	Silage
Merced NWR-E Dowitcher Unit	Merced	Public	6,000	mustard/thistles
Acre Farms	Colusa	Private	5,000	cattails

Table 4. Tricolored Blackbird sites visited in 2001 that lacked breeding colonies; at some sites nonbreeders were present and counted.

Site	County	Nonbreeders	Latitude and longitude
Capitol Outing Club	Colusa	0	38.62042, 121.96224
Little Panoche Wildlife Area	Fresno	0	36.783111, 120.796833
Sandy Prairie Road	Humboldt	0	40.554167, 124.145833
Mud Creek	Kern	200	34.93953, 119.27131
Wind Wolves Reserve	Kern	1	34.34425, 119.18778
Hwy 20	Mendocino	0	39.35, 123.6167
Hebert Pond	Monterey	0	36.76329, 121.62218
San Carlos Ranch Pond	Monterey	0	36.45771, 121.79763
Volta Marsh	Merced	0	37.09969, 120.83939
Big Ben Road	Placer	2500	38.955911, 121.262953
Manzanita Road	Placer	300	38.931686, 121.316056
Cactus Road	Riverside	350	N/A
Wilson Valley Road	Riverside	50	33.505556, 116.838889
Viejas Creek	San Diego	0	Township & Range 15S 3E SE sect.
Palmer Road	Santa Barbara	80	34.78402, 120.32353
I-5 and I-580 intersection	Solano	0	37.60149, 121.34307
Hetch Hetchy Liming Plant	Tuolumne	550	37.80375, 120.5481

Recommendations for future Tricolored Blackbird work in California

1. One challenge to summarizing current and previous Tricolored Blackbird surveys and evaluating management potential at given sites is that most sites have not been given names that would allow the cross-referencing of data between years. We recommend that all sites visited historically (prior to 2002) be given a unique name and associated 4 letter code. Prior to each survey season, all volunteers would receive a list that would have these names codes and GPS coordinates. Fields would exist on the survey forms (and in the electronic data submission forms) for these names and codes. Volunteers would apply the appropriate codes during surveys, and would be able to create new, unique codes should they find additional Tricolored Blackbird colony sites.

2. Although conducting season-long coverage was encouraged as opposed to the historic 2-3 day statewide surveys, almost everyone submitted only a single survey for each site. Perhaps more discussion with volunteers would be helpful in engaging them in the benefits and needs for season-long surveys. This may entail greater volunteer coordination, as some of the volunteers responsible for collecting these data will be unable to return to sites multiple times over the season. Additionally, the creation of a protocol for multiple visits that we are asking volunteers to adhere to should certainly help in this matter.

3. We received some data from volunteers who visited historic sites but found no birds. However, we suspect that some volunteers may not have submitted data if no birds were observed on a given day. In fact, some sites may have been visited multiple times, but data might not have been submitted for days where no birds were observed. More could be done to stress that a lack of birds at a site is of course still data (most volunteers of course are sensitive to this), and to encourage surveyors to submit all visits to a site, even when birds are absent. Modifications could be made to the current electronic data submission form, so that some of the fields will not have to be filled out during every return visit to a given site, which would cut down on the amount of time it would take for volunteers to submit their data. Fields that may not need duplication during every submission include directions, latitude and longitude, land use, ownership, and history of site.

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Results of the Tricolored Blackbird 2008 Census

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Introduction

The Tricolored Blackbird (*Agelaius tricolor*) is a near endemic with at least 95% of the population restricted to California. Smaller breeding colonies are also known to occur in Nevada, Oregon, Washington, and Baja California, Mexico. Tricolored Blackbirds are also the most colonial terrestrial bird in North America (Orians 1961, Beedy and Hamilton 1999). This combination of narrow geographic range and highly colonial breeding make Tricolored Blackbirds particularly susceptible to disturbance and habitat loss. As a result, the population has declined dramatically over the last 70 years (DeHaven et al. 1975, Beedy and Hamilton 1997, 1999), from an estimated millions of birds in the 1930's (Neff 1937) to 370,000 birds in 1994 (Hamilton et al. 1995), when the first formal statewide census was carried out, to a low estimate of 162,000 in 2000 (Hamilton 2000).

Detailed accounts of the natural history of this species, its population biology and historical status are provided elsewhere (Beedy and Hamilton 1999, Beedy 2008, Cook et al. 1993, Orians 1961), but central to this decline has been large-scale loss of natural habitat, primarily young freshwater marsh, within the Central Valley where this species is most concentrated (Hamilton 2000, Beedy and Hamilton 1997). Presumably in response to loss of natural habitat, Tricolored Blackbirds now form "mega-colonies" in grain fields (silage), usually associated with dairy farms in the San Joaquin Valley. Silage fields are attractive habitat due to the structure they provide for building nests and their usual proximity to open water and irrigated pasture for foraging. In addition, dairies typically have piles of stored grain (e.g. corn) that are an attractive food source for adult, breeding Tricolored Blackbirds. These mega-colonies can include over 100,000 birds, representing approximately 25% of the world's population. Unfortunately, the timing of harvest in these grain fields is usually prior to young birds fledging and, as a result, a large portion of the reproductive effort for this species is frequently lost during harvest of these large colonies.

In response, the Tricolored Blackbird Working Group was formed as a collaborative consortium of state and federal agencies, Audubon California, UC Davis, and the agricultural community to address protection of large colonies in silage fields, promote further research and monitoring of this species to improve conservation, and seek to implement habitat protection and restoration for Tricolored Blackbirds. An important part of this effort has been statewide censuses of the Tricolored Blackbird population in California every few years, funded by the U.S. Fish and Wildlife Service. Statewide volunteer-based censuses were carried out in 1994, 1997, 1999, 2000, 2001, and 2005 (Hamilton et al. 1995, Hamilton et al. 1999, Beedy and Hamilton 1997, Hamilton 2000, Humple and Churchwell 2002, USFWS unpublished data). In addition, a census limited to the Central Valley was conducted in 2004 (Green and Edson 2004) and more detailed studies of breeding activity in the Central Valley have been carried out in 2006,2007, and 2008 (Meese 2006, 2007, 2008)

The 2008 statewide survey was coordinated by Audubon California. The goal of this survey was to develop the best statewide population estimate possible, using volunteers across the state. We placed particular emphasis on expanding overall geographic coverage in the state and thorough surveys in Southern California counties due to concern for this sub-population. This report summarizes the 2008 survey results including comparison to past surveys, overall population status, regional variation in abundance, and breeding substrates.

Methods

Survey methods and timing were similar to past statewide census efforts, allowing for direct comparison among years.

Coordinators and Volunteers

The 2008 survey was sponsored by the USFWS and coordinated by Rodd Kelsey and Jon Feenstra for Audubon California. One primary coordinator (RK) was responsible for general organization and oversight, as well as coordinating the effort north of Kern County. Jon Feenstra was responsible for organizing the effort in southern California. Having a part-time coordinator in southern California was a significant benefit to the overall survey by increasing recruitment of volunteers and improving survey coverage based on local knowledge.

As with past surveys, this was a volunteer-based effort. Volunteers were initially recruited beginning in November 2008 using the database of 2005 survey volunteers provided by the USFWS. Announcements seeking additional volunteers were sent out to Audubon Chapter representatives around California and posted on prominent bird watching listservs; including Central Valley Birds, South-Bay Birds, Birding California, and Shasta Birds. Also, a flier announcing the survey was distributed at the Central Valley Bird Symposium in November 2007 and posted on the eBird California website. Volunteers were asked to specify the county or counties in which they preferred to survey and assigned to known colony sites and the areas surrounding those colonies. The total area covered by each volunteer (or team of volunteers) varied substantially based on the time they were able to dedicate for the survey. In addition, willing volunteers were designated as County Leaders who were instrumental in ensuring that their county was well surveyed by local volunteers and coordinating data entry following the survey.

Survey Timing

The 2008 survey was carried out April 25 to 27, consistent with similar three day windows during late April for past surveys. This timing is selected to capture as many birds as possible on colonies during their first breeding attempt of the year. Tricolored Blackbirds and colonies can shift locations over relatively short periods of time during the breeding season. Making sure that a comprehensive count is made in a narrow time window helped ensure we were not counting the same birds more than once. The survey window was selected to be between Friday and Sunday to accommodate volunteers who were doing the survey on their own time. Observations of historic sites by local experts where no birds were present immediately prior to and following the formal survey time window were included in our results, since these allowed for additional coverage of new sites/areas during the survey without expending time on sites that were already known to be unused in 2008.

Survey Locations and Priorities

Our goal was to cover as many existing and new sites as possible. Our priorities for survey locations were as follows:

> Priority One: survey all known past colony locations based on a database of colony sites provided by Dr. Bob Meese (n=208). These included all past colony sites reported in 2005 and in the California Natural Diversity Database (CNDDB) for which Meese could confirm the geographic location. Also, volunteers were asked to add additional colony sites that they were aware of that were not on the initial list. Volunteers added an additional 98 sites to the list prior to the survey. Each volunteer was assigned to one or more of these colony sites, for which they were responsible to conduct a census during the survey window.
>
> Priority Two: survey suitable habitat in the vicinity of known sites as well as at previously reported but unconfirmed locations of Tricolored Blackbird Breeding colonies.

Priority Three: search other suitable habitats in the region for new colony sites.

Maps

All confirmed colony locations from the initial database were mapped using ArcMap 9.2 (ESRI). For each known colony (or set of colonies in close proximity), we created a 1:100,000 scale map that showed primary and secondary roads, county boundaries, and colony locations (e.g. Figure 1). A total of 158 maps were created and named according to the county in which they are located. These maps were converted to pdf format and uploaded onto the Tricolored Blackbird Portal for download and use by volunteers during the survey.

Survey Protocol

We provided a survey protocol (Appendix 1) for each volunteer that outlined survey priorities, guidelines for viewing colonies and duration of site visits, estimating the size of colonies, behavioral observations, and recording colony characteristics (e.g. substrate).

Training

Three training sessions were held for volunteers at three different locations: Kern National Wildlife Refuge, Merced National Wildlife Refuge, and the Yolo Bypass Wildlife Area in Yolo County. Training sessions included an indoor session and site visits to local colonies. The objectives of these training sessions were to help volunteers distinguish Tricolored Blackbirds from Red-winged Blackbirds, introduce the survey protocol and online database, and to visit local colonies to practice identification and colony size estimation. A total of 45 volunteers were able to attend these trainings.

Colony Size Estimation

Estimating the number of birds in a Tricolored Blackbird colony that is relatively large is a challenging task and accurate counts of large colonies are nearly impossible. For small colonies (fewer than 100 birds) volunteers were asked to count all individuals (precise count). For larger colonies, scanning counts were used to estimate the number of birds present (see Protocol-Appendix 1). Three estimates of colony size were reported: minimum number, maximum number, and best estimate. While these are still based on visual estimates, they provide a range that reflects the likely precision of the estimates. Many of the major colonies in the San Joaquin Valley were visited at least once by Bob Meese during his intensive surveys of settlement and breeding by Tricolored Blackbirds. Colony size estimates for these colonies were adjusted based on Meese's own observations at those colonies.

In addition to visual estimates of the number of birds, volunteers were asked to report the approximate area of occupied substrate for each colony. These data have been entered along with the visual estimates and can be used in future analyses as a secondary estimate of colony size. However, using a similar comparison, Hamilton (1998) reported that visual estimates of colony size only varied from estimates based on nest density by an average of 15%.

Colony Observations

For each colony, volunteers were asked to record colony attributes, including: primary and secondary substrate, dimensions of the physical area occupied, presence and distance to open water, and the presence of stored grains. Also, volunteers were asked to record behavioral observations for Tricolored Blackbirds using the colony sites. These included whether the birds were singing or carrying food and if the colony was quiet (indicating period of incubation). These behavioral observations are important for understanding the status of colonies and also help evaluate the

precision of the colony size estimate, since the activity of birds at the colony influences their detection and thus the numbers estimated.

Results

Abundance

A total of 155 volunteers participated in the 2008 survey, visiting 361 historic and new sites in 38 counties within California (Figure 1, Table 1). The census total was 394,858 birds at 180 sites (Tables 1 and 2, Appendices 2 and 3). During this year's survey, 135 sites were documented as breeding colonies with an estimated 392,581 birds (Appendix 2).

Out of 38 counties surveyed, there were 32 in which Tricolored Blackbirds were detected (Tables 1 and 2, Figure 2). Regional distribution was similar to that reported from previous surveys with the vast majority of birds (86.4%) occurring in the San Joaquin Valley (Tables 3 and 4). Nine of the top 10 and 15 of the top 20 colonies were in the San Joaquin Valley (Table 5, Figure 2) with 63% of the population occurring at only five colony sites (Table 5) in Merced, Tulare, and Kern counties (Table 2).

The southern California population is of particular concern due to recent dramatic declines. In 2008 volunteers counted 5,487 birds at 24 sites (Tables 2 and 3). Several known historic sites occur on private land and volunteers were unable to gain access. As a result, this may be an underestimate of the number of birds, but there is no reason to suspect that a large number of birds were left uncounted in southern California.

Substrates

As previously documented, Tricolored Blackbirds use a range of native and non-native vegetation substrates for breeding. The majority of colonies in 2008 were formed in cattail marsh (35%) and Himalayan blackberry brambles (28%) (Table 6, Figure 3). However, this percentage is based on the number of colonies that occur in different substrates. For the number of birds, nearly 50% of the total estimated population occurred in colonies within triticale grain fields associated with dairies (Table 6). Of the top 20 colonies, five (174,000 birds – 44% of the total population) were in triticale on private dairies.

In addition to using grain fields for nesting, the majority of birds counted were at colonies where stored grain was nearby (Figure 4), even though this accounted for a smaller percentage of all the colonies. Sixteen of the top 20 colonies were in locations associated with stored grain (Table 5).

Discussion

As with any large-scale survey using multiple observers and crude estimates of the number of birds in large colonies, the population estimate from the 2008 survey should be considered with caution. However, this estimate can be reasonably compared to estimates from previous surveys, with the exception of the 2001 survey when fewer volunteers were used and a smaller geographic area was covered (Table 2). A concerted effort was made in 2008 to cover as many known and probable Tricolored Blackbird breeding sites/areas as possible. As a result, more sites (361) were visited by volunteers than in previous surveys (although we were unable to determine the total number of sites visited by volunteers in 2005). As a result, some portion of the increase in population size documented during the 2008 survey may be attributable to increased effort. A number of new, small colony sites were discovered by volunteers reflecting the fact that many more small colonies remain undetected on private land and in other un-surveyed portions of the Tricolored Blackbirds range. However, given the concentration of birds in relatively few

large colonies and within a few well known and well surveyed portions of their range (especially the San Joaquin Valley), it is unlikely that large numbers of Tricolored Blackbirds go undetected during the statewide surveys. Most new colonies detected in 2008 and during previous surveys, represent smaller colonies at the periphery of this species' range that were probably occupied historically (Hamilton 2000, 2004, Green and Edson 2004, Beedy 2008). Thus, we don't feel that the increase in population size in 2008 can be fully attributed to increased effort. This is supported by the fact that there is only a weak positive relationship between the number of sites visited during the survey and the number of birds detected (Figure 5).

Population Trend

There have been striking declines in the abundance of Tricolored Blackbirds over the last 70 years (Beedy and Hamilton 1991, Hamilton et al. 1994, 1997, 1999, Hamilton 2000, Green and Edson 2004, Cook and Toft 2005) and continued declines have been documented in previous statewide surveys. Between the 1994 and 2000 surveys, the number of birds counted declined from 370,000 birds to around 162,000, with only 104,000 recorded in 1999 (Tables 2 and 3, Figure 6; Hamilton et al. 1995, 1999, Hamilton 2000). The primary reasons for this have been widespread loss of native breeding habitat and, more recently, the concentration of large colonies in agricultural fields where colonies are subject to reproductive failure for a large portion of the population (Hamilton et al. 1999, Hamilton 2000). In addition, predation by nest predators, specifically Black-crowned night herons and cattle egrets has been a significant source of mortality (Hamilton 2000, Meese 2007). Such predation is probably natural, but there has been a steady increase in population sizes of several major avian predators in California (black-crowned night heron, cattle egret, American crow, and common raven) over the last 40 years (Sauer et al. 2008) and the increasing concentration of birds in mega-colonies may have increased their susceptibility to nest predation when colonies are found by predators.

Despite the clear declines from historical numbers, the 2005 and 2008 surveys indicate a recent increase in population size that may not be entirely a byproduct of increased survey effort. There are a couple of potential explanations for this trend. As noted by Hamilton (2000), the population estimate in 1999 may have been an underestimate due to an inability to track the fate of a large flock (~75,000) detected prior to the survey. This flock was not included in the total survey estimate for 1999. Even if these birds were added to the total estimate, this would still be considerably lower than the population estimate for 1997, but comparable to the estimate from the 2000 survey, indicating a more stable rather than declining population. Second, changes in climate may have resulted in decreased reproduction and lower detection rates of Tricolored Blackbirds during 1999 and 2000. One of the strongest El Nino events on record occurred in 1997, followed in the 1998/1999 season by an equally strong La Nina event that carried over into the 1999-2000 season (Figure 7). La Nina years are characterized by cooler temperatures and lower than average rainfall, which can be seen in the precipitation record for the Los Banos area (Figure 7). This dramatic decline in precipitation may have had two effects that contributed to lower estimated numbers of Tricolored Blackbirds in 1999 and 2000. First, reduced insect abundance may have forced birds to search more widely for suitable areas to breed resulting in fewer large colonies in traditionally surveyed areas. This is supported by Hamilton et al.'s (1999) observation that the 1999 season was unusual in that colonies tended to form later in the season and there were still many birds moving around (unsettled and ultimately unaccounted for) in April when colonies are normally established. Second, lower precipitation may have reduced food availability to such a level that reproduction was low in 1999 and 2000. Lower colony detection plus reduced reproductive success combined with the now regular disturbances associated with agriculture and predation could explain the dramatic dip in numbers detected during 1999 and 2000 (2001 was also low but was a year when less volunteer effort was dedicated to the survey so a direct comparison cannot be made).

Finally, recent conservation efforts may also explain increased population estimates in 2005 and 2008. Efforts to protect the Tricolored Blackbird in response to the declines documented since the 1970's began in the early 1990's.

Working with landowners to either change management of crops or to buy the crop in a field to protect colonies have both been used successfully since 1991 (Hamilton et al. 1994, Hamilton 2000, Meese 2007, Meese pers. comm..). In 1994 a crop was bought to protect a 28,000 bird colony. In 1999 the USFWS and CDFG negotiated with a landowner to buy a crop that protected the reproductive effort of a 35,000 bird colony (resulting in approximately 32,250 fledglings – Hamilton et al. 1999). Since then several more silage buyouts or negotiated management changes with private landowners have occurred in 2000, 2005 and 2007. Losses to harvest of agricultural fields certainly have continued – there have been several known cases of colony destruction and presumably many more that went undetected. However, silage buyout arrangements with willing landowners may have contributed significantly to stemming the steady decline in Tricolored Blackbirds and, possibly, allowed this species to recover from losses that occurred during the 1999 – 2000 dry years. In addition, the efforts of the Tricolored Blackbird Working group to promote vegetation management and protection of colonies may have also had an influence on the apparent population increases. Numerous federal land managers now actively protect and manage for Tricolored colonies (e.g. Kern and Merced NWR).

In 1994 and 2000 the top 10 colonies accounted for 60% and 59% of the total population estimate, respectively. In 2008, this has increased to 77.5%. This increase in concentration of individuals at fewer colonies increases the chances of reproductive failure for a significant proportion of the population in any given year. The cause of such concentration is due to large-scale habitat loss and attraction to agricultural fields where food and water are abundant. Long-term conservation will need to address this issue and work towards providing suitable habitat in more places and attracting birds to those sites.

Regional Shifts in Population Concentration

In addition to increased concentration in particular colonies, there has been an increase in the proportion of the population using the San Joaquin Valley (where mega-colonies in agricultural fields tend to form; Figure 8). Hamilton et al. (1995) noted that populations in the Sacramento Valley and San Joaquin Valley in 1994 were 27% and 230% of what Neff (1937) documented, respectively. This increasing concentration in the San Joaquin Valley seems to have continued. In 1994, 68% of the estimated population occurred in the San Joaquin Valley; as of the 2008 survey this had increased to over 86%. Along with this there has been a steady decline in the population using the Sacramento Valley during the census window and an overall decline in the Southern California population (Figure 8, Tables 3 and 4). Large colonies are still seen in the Sacramento Valley, particularly late in the season when birds have finished breeding at more southern colonies (Hamilton 2000, Beedy 2008). Birds may still be habitually using colony sites in the Sacramento Valley early in the breeding season (Mar – Apr), but now a greater proportion settle in the San Joaquin Valley during the early part of the year. Agriculture, in particular the expansion of dairy operations in this region, may be responsible for this shift.

Southern California

Tricolored Blackbirds were historically very abundant in Southern California, with large colonies in coastal marshes (Beedy and Hamilton 1999), but there has been a steady and dramatic decline in the southern California population since the early 20th century (Neff 1937, Beedy and Hamilton 1997, Unitt 2004). Since the statewide surveys began in 1994, however, the population has fluctuated between around 6,000 and 13 – 17,000 birds for most survey years, with no obvious negative trend (Table 3, Figure 9). The population estimate in 2001 was lower (581 birds), but this is due to reduced effort in Southern California during 2001 (only 5 sites were visited). The one exception is in 1997 when the estimated population size was much larger than in the other survey years (42,500 birds). The increased southern California population in 1997 was the result of a larger proportion of the overall population nesting in Southern California during April that year. This increase coincided with the strong El Nino event in 1997, which increased

rainfall and may have improved breeding conditions in Southern California. Also, the larger number of birds in 1997 is mostly due to one colony (Hemet Sewage) where there were an estimated 35,000 birds. In other years, this colony varied between 0 and 10,000 birds. If the large number of breeding birds in Southern California in 1997 represents individuals that would have otherwise moved into the San Joaquin Valley (this is indicated by the increased percentage of overall population in Southern California during April 1997, Table 4), this suggests that a large number of birds may move between southern and northern breeding sites annually. Currently ongoing genetic analyses should shed some light on the degree of genetic exchange among these regions. While there is no obvious negative decline since 1994, there is considerable variation in number and relatively few birds overall. Thus, the population may be too small to be viable given how susceptible this species is to environmental and anthropogenic disturbance. Continued loss of habitat and water in Southern California may result in this species being extirpated from this region.

Trends in Substrate Use

Previous surveys and studies have documented the steady decline in use of freshwater marsh habitat for nesting, with a shift to using non-native vegetation (e.g. Himalayan blackberry) and agricultural fields. This shift has continued. In the 1930's 93% of colonies were in freshwater marsh (Neff 1937). In the 1970s this had declined to 53% (DeHaven 1975) and in 2008 only 35% of colonies were established in freshwater marsh (Table 6, Figure 3). This is mostly due to large-scale loss of freshwater marsh habitat in California. In addition, the freshwater marsh that remains is frequently senescent due to a lack of disturbance. Tricolored Blackbirds are attracted to young emergent marsh and appear to avoid using senescent marsh. In fact, regular disturbance of freshwater marsh colony sites can promote regular annual use of a site, contrary to the perception that Tricolored Blackbirds are purely nomadic, rarely using the same site annually (Meese pers. comm.). Loss and decline in suitability of remaining marsh have resulted in increased use of non-native vegetation, with Himalayan Blackberry and grain fields associated with dairies now critically important breeding habitat. Short-term conservation efforts will need to continue protecting colonies in these habitats, while long-term efforts should focus on creating and managing for suitable freshwater marsh.

Recommendations

Previous authors and the Tricolored Blackbird Working Group have developed a comprehensive list of detailed recommendations for research, monitoring, outreach, and conservation (Beedy and Hamilton 1991, Hamilton et al. 1994, 1997, 1999, Hamilton 2000, Green and Edson 2004, Cook and Toft 2005, Meese 2006, 2007, Tricolored Blackbird Working Group 2007). I will not repeat those here, but recommend that they continue to guide conservation efforts. The following are some additional recommendations for ongoing efforts to monitor the Tricolored Blackbird population, as well as additional opportunities for research and conservation action:

1) <u>Triennial Surveys</u>

I recommend that the triennial survey be continued indefinitely. The triennial statewide census has become an important tool for monitoring the overall status and distribution of tricolored blackbirds and is essential for developing an estimate of population size for this species. In addition, conducting a statewide, as opposed to more local surveys of important colonies, is an important way to track changes in distribution, range boundaries, and habitat use over time. Tracking these large-scale changes will be particularly important as climate change, water use, and habitat loss alter the spatial distribution of suitable habitat across the state. An understanding of shifts in distribution and habitat use will be essential for identifying opportunities for habitat restoration and protection.

One limitation to the triennial survey as it has been implemented in most years is the focus on early season breeding. Tricolored blackbirds are itinerant breeders (Hamilton 1998) and so a limited survey window is necessary to avoid

double counting birds that move over short periods of time to new colonies. For this reason, early season breeding in April has been the traditional focus. However, this limits our understanding of seasonal shifts in habitat use and range that may be important for future conservation efforts (Hamilton 2000). The current survey protocol results in an emphasis on colonies in the San Joaquin Valley, however, large portions of the population move north for breeding later in the season. Given the potential for colony failure following natural or human disturbance early in the season and the potential importance of late season reproductive success to population viability, a better understanding of the size and location of late season colonies will be important for long-term protection of this species. For this reason, I recommend that a late season survey be formally incorporated as part of the triennial survey, similar to what was attempted in 2005 and the limited late season surveys by Hamilton et al. in other surveys (1995, 1999). While this would increase the total level of effort and cost of the survey, the incremental increase should be relatively small given that the volunteer network, training, and survey materials will have already been developed in the process of organizing the April survey. The following is a proposed schedule with recommendations for future triennial surveys:

- **Volunteer Recruitment (January – March)**: early and comprehensive recruitment of volunteers is essential to cover the entire state well. There are many volunteers who have participated in most or all of the surveys to date. So, there is considerable expertise and enthusiasm among potential volunteers. Every effort should be made to attract the many local experts from around the state to participate. However, many will also have conflicts that prevent them from participating and it is important to have them get engaged early.

- **Engage Landowners (January – March)**: a more deliberate effort to make contact with landowners, particularly in the agricultural community, should be made prior to the survey. Many colonies occur on private land and so access will allow volunteers to count more colonies and get better estimates at colonies not near public access points. The survey may be the best opportunity to engage landowners and provide them with information about this species. It is also be an important way for the conservation community to be made more aware of landowner concerns. I recommend that survey coordinators work with the USFWS, other agencies, and the Farm Bureau to identify ways that agricultural landowners can be made aware of the survey. One or more presentations to the agricultural community in important parts of the Tricolored Blackbird breeding range could be particularly valuable.

- **Training (Early April)**: volunteers were appreciative of the training received in 2008. Approximately 1/3 of the volunteers attended one of three training sessions provided. These are important opportunities to meet with volunteers, address any of their concerns, and provide survey materials in person. These trainings should cover: visual and behavioral identification of Tricolored Blackbirds and how they are different from Red-winged Blackbirds; Tricolored Blackbird natural history; a review of past surveys and the current status of Tricolored Blackbirds; and survey methods and data entry via the Tricolored Blackbird Data Portal. Also, having a portion of the training dedicated to field visits at known colonies is especially valuable to the volunteers. Pre-survey scouting will be useful for identifying suitable colonies for training. Ideally, volunteers can be taken to colonies of varying size where they can practice estimating the number of birds.

- **Pre-survey scouting (April 1 – 15)**: pre-survey visits to known or potential colony sites are an important way to maximize the effectiveness of the survey. Pre-survey scouting can help identify sites worth visiting during the survey and those that should not be surveyed due to habitat loss. In addition, pre-survey scouting can provide valuable information on the timing of colony formation, since this can vary significantly from year to year. The Tricolored Blackbird Data Portal that is now online provides the ideal mechanism for volunteers to record observations from any time of year and, in particular, to log observations from pre-survey scouting.

Also, pre-survey scouting may help volunteers identify sites on private land prior to the survey so that they can work with the USFWS or survey coordinators to gain access during the formal survey.

- **April Survey (late April)**: conduct early season survey similar to those that have already been done. This survey would place particular emphasis on southern California and the San Joaquin Valley, but also attempt to get as many other areas surveyed as possible.

- **June Survey (late June)**: conduct a late season colony survey, with additional effort dedicated to portions of the range in the Sacramento Valley north to southern Oregon.

2) Annual Surveys

Triennial surveys are not suitable for capturing more detailed patterns of population fluctuations in response to environmental change or disturbance. I recommend that annual surveys of key colonies or areas be carried out. Many of the important colonies, particularly those on and around federal land (e.g. on and around Kern NWR) are currently being monitored every year so that massive colony failures in grain fields can be avoided. Annual surveys using methods similar to those for the triennial surveys should be established for these important colonies (e.g. areas around the top 10 or 20 colonies reported from the last triennial survey). Standardized the methods will allow comparison of annual estimates to those from the triennial survey. Also, annual surveys will provide a more detailed view of population fluctuations that can then be examined in relation to temperature and precipitation patterns or other important environmental factors. Annual surveys will also be important for identifying and avoiding impacts to major colonies. Finally, annual surveys will provide the kind of data on population dynamics that can be used to develop population models and viability analyses.

3) Intensive breeding surveys and banding

Information on breeding success and movement of individuals are critical for identifying important habitat characteristics and areas where habitat restoration and protection are needed. One of the critical pieces of information needed for analysis of population viability is survival. Banding individuals at colonies and encouraging volunteers from across the state to report observed banded birds on the Tricolored Blackbird Data Portal will be an important source of survival and movement data. I recommend that the current banding efforts and studies of settlement and breeding (Meese 2006, 2007) be continued. Annual surveys of important colonies (see #2 above) could possibly be combined with this or be a separate but complimentary effort.

4) Tricolored Blackbird Data Portal

The newly developed online data portal is a significant benefit for monitoring Tricolored Blackbird populations. I recommend that a concerted effort be made to advertise its existence to birders around California and Oregon, encouraging them to report observations via the portal. If the portal is used extensively, these data will become an essential part of tracking spatial and temporal changes in the Tricolored Blackbird population. Also, I recommend that the methods from the triennial surveys be prominently displayed on the portal as methods that individual observers should use whenever possible, including use of the datasheet. This will help improve the quality of observations submitted and allow them to be compared with observations from formal censuses.

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Acknowledgements

Thank you to all of the volunteers. This is a volunteer effort and could not be done without their dedication and willingness to spend a few long days out counting Tricolored Blackbirds. The many volunteers that participated this year and in past years are largely responsible for our current understanding of the status and distribution of this species and play a critical role in its conservation.

I would like to thank the U.S. Fish and Wildlife Service, Pacific Region, Portland Oregon for funding this and past surveys. In particular, thank you to Michael Green for valuable input and guidance.

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Thank you to Dr. Bob Meese for his valuable guidance before and during the survey, as well as his help in conducting the volunteer training session in Merced. Also, his leadership in guiding the development of the Tricolored Blackbird Data Portal helped make sure it was ready for the survey.

Thank you to Dave Waetjen for development of the Tricolored Blackbird Portal. Dave was tireless in working with the survey coordinators to make sure that the online data entry system was running prior to the survey and designed so that volunteers would use it.

Tables

Table 1. Number of counties and sites surveyed by region and total number of birds counted per region during 2008 Tricolored Blackbird Survey.

Region	No. Counties	Occupied Counties	Sites Visited	Occupied Sites	Occupied Colony Sites
Central Coast	5	5	54	41	16
North Coast	3	2	13	8	7
Northeast Interior	1	1	3	2	1
Sacramento Valley	9	7	82	37	28
San Joaquin Valley	7	5	147	62	57
SF Bay	9	8	22	6	4
Southern California	4	4	40	24	22
TOTAL	**38**	**32**	**351**	**180**	**135**

Table 2. Number of Tricolored Blackbirds counted by region and county during Tricolored Blackbird Surveys 1994 – 2008.

Region/County	1994	1997	1999	2000	2001	2004	2005	2008
Central Coast								
Monterey	2,220	5,900	2,436	1,018	3,595		30	50
San Benito	0	778	160	1,420				66
San Luis Obispo	0	660	511	1,000			4,210	6,242
Santa Barbara	2,000	0	0	0	80		2,900	500
Santa Cruz	0	0	300	200			0	220
North Coast								
Humboldt	100	0	0	0	0		0	
Lake	0	60	0	0			0	711
Mendocino	0	12	15	0	0		0	835
Sonoma	30	0	0	0			0	0
Northeast Interior								
Lassen	0	6	0	309			0	
Modoc	250	250	0	0		1,120	0	
Shasta	2,585	0	0	0			20	1,030
Siskiyou	947	250	0	0			0	
Sacramento Valley								
Amador								6,600
Butte	0	0	5,958	5,434	500		0	2,541
Colusa	27	4,175	1,031	2,500	13,000		0	301
El Dorado	0	200	0	0			250	0
Glenn	2,000	0	0	0			0	
Placer	1,000	658	4,500	6,200	2,800		1,600	12,050
Sacramento	94,028	31,338	12,859	16,383			16,400	3,551
Sutter	235	0	400	200			0	0
Tehama	0	35	0	0				
Yolo	475	200	0	80	400	400	3,070	1,900
Yuba	597	950	0	0			250	10,405
San Francisco Bay								
Alameda	24	1,200	4,000	0			200	28
Contra Costa	400	0	0	0		3,000	0	358
Marin	400	0	0	0			0	0
Napa	11	400	680	104			300	0
Santa Clara	3,500	550	0	0			100	50
Solano	5	75	33	0	0	300	2,000	200
San Joaquin Valley								
Calaveras	0	8,313	0	760			30	385
Fresno	21,150	2,550	40,040	5,061	10,000	11,000	1,550	1,000
Kern	72,255	17,000	3,350	10,650	21,051	13,065	155,407	69,702
Kings	10,000	33,300	0	10,000	950	10,000	0	2,500
Madera							2,960	117
Mariposa							0	
Merced	79,100	13,000	3,961	27,100	39,070	71,500	17,900	154,674
San Joaquin	15,978	11,857	0	7,073			0	0
Stanislaus	3,928	150	4,126	15	550		12,180	21,910
Tuolomne*	0	0	0	575	550		250	645
Tulare	50,000	55,500	14,000	53,300	53,000	20,100	18,500	90,800
Southern California								
Los Angeles	815	430	1,125	610			5,100	1,270
Orange	1,034	231	106	495			0	
Riverside	2,175	38,356	4,000	10,000	430		12,200	2,150
San Bernardino	0	300	1,000	0			0	700
San Diego	2,000	3,236	195	2,021	150	400	395	1,367
Ventura	90	0	0	0			0	
TOTAL	**369,359**	**231,920**	**104,786**	**162,508**	**146,126**	**130,885**	**257,802**	**394,858**

* Note: Tuolumne county was included with Southern California in Hamiliton et al. (2000), but for this summary is included in the San Joaquin Valley.

Table 3. Total Tricolored Blackbirds counted across regions in statewide surveys 1994 - 2008

Region	1994	1997	1999	2000	2001	2005	2008
Central Coast	4,220	7,338	3,407	3,638	3,675	7,140	7,078
North Coast	130	72	15	0	0	0	1,546
Northeast Interior	3,782	506	0	309		20	1,030
Sacramento Valley	98,362	37,556	24,748	30,797	16,700	21,570	37,348
San Joaquin Valley	252,411	141,670	65,477	114,534	125,171	208,777	341,733
SF Bay	4,340	2,225	4,713	104	0	2,600	636
Southern California	6,114	42,553	6,426	13,126	581	17,695	5,487
TOTAL	**369,359**	**231,920**	**104,786**	**162,508**	**146,126**	**257,802**	**394,858**

Table 4. Percent of total number of birds in each region for Tricolored Blackbird Surveys 1994 - 2008

Region	1994	1997	1999	2000	2001	2005	2008
Central Coast	1.1%	3.2%	3.3%	2.2%	2.5%	2.8%	1.8%
North Coast	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.4%
Northeast Interior	1.0%	0.2%	0.0%	0.2%	0.0%	0.0%	0.3%
Sacramento Valley	26.6%	16.2%	23.6%	19.0%	11.4%	8.4%	9.5%
San Joaquin Valley	68.3%	61.1%	62.5%	70.5%	85.7%	80.9%	86.5%
San Francisco Bay	1.2%	1.0%	4.5%	0.1%	0.0%	1.0%	0.2%
Southern California	1.7%	18.3%	6.1%	8.1%	0.4%	6.9%	1.4%

Table 5. Top twenty colonies in terms of number of birds estimated at colony during 2008

County	Colony Name	Number	Cum. % of Total	Substrate	Grains Present
Tulare	Riverview Dairy	80,000	20.3%	Triticale	Yes
Kern	Costa's Dairy	60,000	35.5%	Triticale	Yes
Merced	Crane Ranch	50,000	48.1%	Himalayan blackberry	Yes
Merced	Honey Lake	33,000	56.5%	Cattails	Yes
Merced	El Nido Road	25,000	62.8%	Triticale	Yes
Merced	Merced NWR Duck Slough Farmfield 1	16,500	67.0%	Milk thistle	Yes
Stanislaus	Road J14	12,500	70.2%	Cattails	No
Merced	Owens Creek	10,000	72.7%	Milk thistle	Yes
Yuba	Hallwood Boulevard	10,000	75.2%	Himalayan blackberry	Yes
Merced	Los Banos Wildlife Area 42	9,000	77.5%	Cattails	Yes
Stanislaus	Ag Slough	7,500	79.4%	Bulrush/Tule	Yes
Amador	Old Stockton Road	6,000	80.9%	Himalayan blackberry	No
Tulare	Vander Eyk Dairy	6,000	82.4%	Triticale	Yes
Placer	Dowd and Waltz	5,000	83.7%	Himalayan blackberry	Yes
San Luis Obispo	Davis Road #1	4,400	84.8%	Willows	No
Merced	Merced NWR: West Farmfield	4,000	85.8%	Milk thistle	Yes
Placer	Gleason Ranch Sunset Blvd. West	4,000	86.8%	Himalayan blackberry	Yes
Tulare	Cornerstone 1	3,000	87.6%	Triticale	Yes
Kern	ECLA Pond	2,500	88.2%	Cattails	Yes
Kings	Naval Air Station Lemoore II	2,500	88.9%	Cattails	No

Table 6. Use of substrates by breeding Tricolored Blackbirds during 2008 survey.

Region	Bulrush/Tule	Cattails	Himalayan blackberry	Milk thistle	Mustard	Nettles	Triticale	Willows	N
Central Coast	16.7%	58.3%	0.0%	0.0%	16.7%	0.0%	0.0%	8.3%	12
North Coast	0.0%	85.7%	14.3%	0.0%	0.0%	0.0%	0.0%	0.0%	7
Northeast Interior	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	1
Sacramento Valley	4.2%	20.8%	66.7%	8.3%	0.0%	0.0%	0.0%	0.0%	24
San Francisco Bay	50.0%	50.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2
San Joaquin Valley	10.0%	22.5%	25.0%	10.0%	2.5%	12.5%	17.5%	0.0%	40
Southern California	25.0%	50.0%	6.3%	0.0%	6.3%	12.5%	0.0%	0.0%	16
% Colonies	**11.76%**	**35.29%**	**28.43%**	**5.88%**	**3.92%**	**6.86%**	**6.86%**	**0.98%**	102
# Birds	**2.8%**	**15.6%**	**23.4%**	**9.0%**	**0.1%**	**1.2%**	**46.7%**	**1.2%**	

Figures

Figure 1. Locations visited during the 2008 statewide survey.

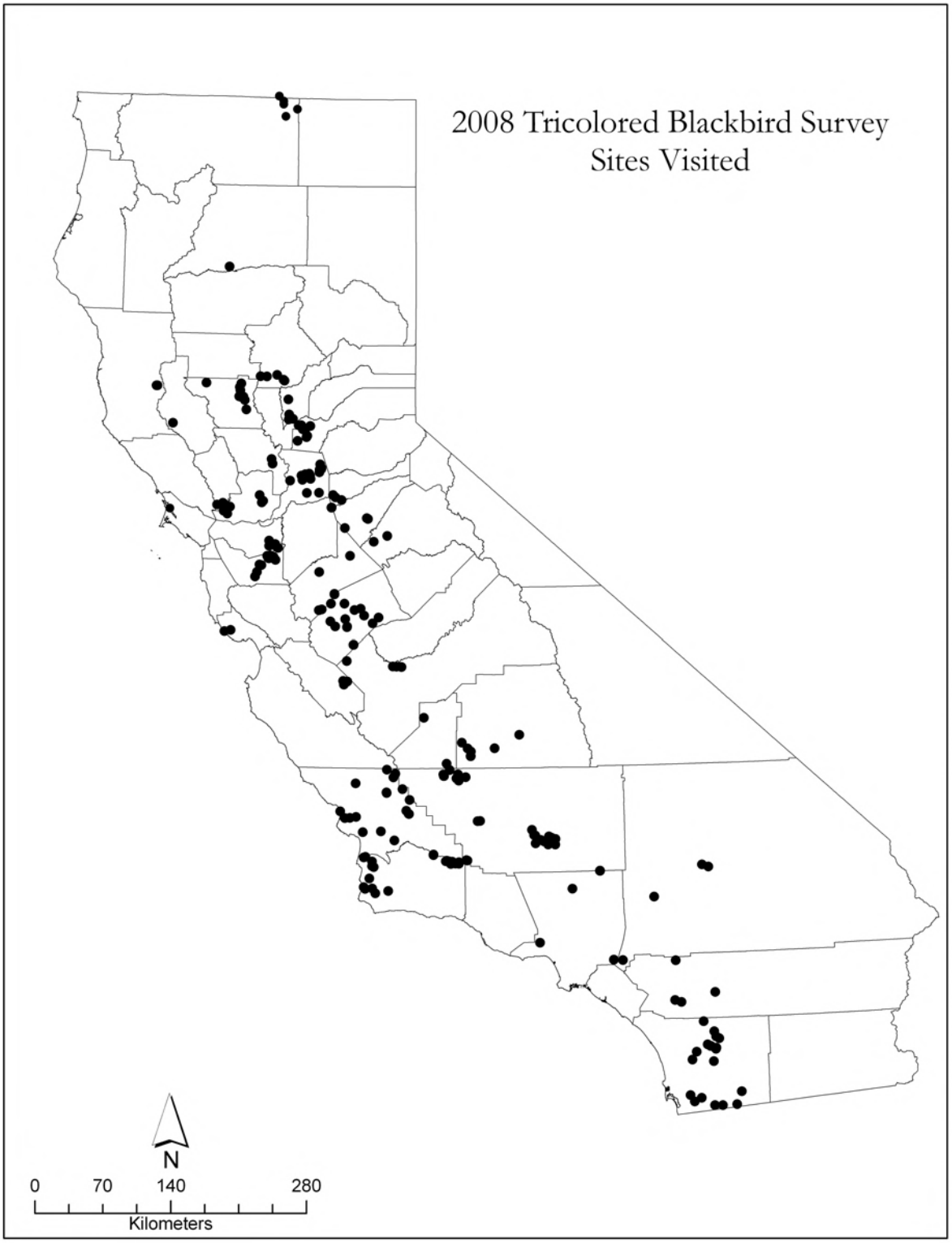


Figure 2. Abundance of Tricolored Blackbirds in 2008 by County (grey indicates counties that were not surveyed.

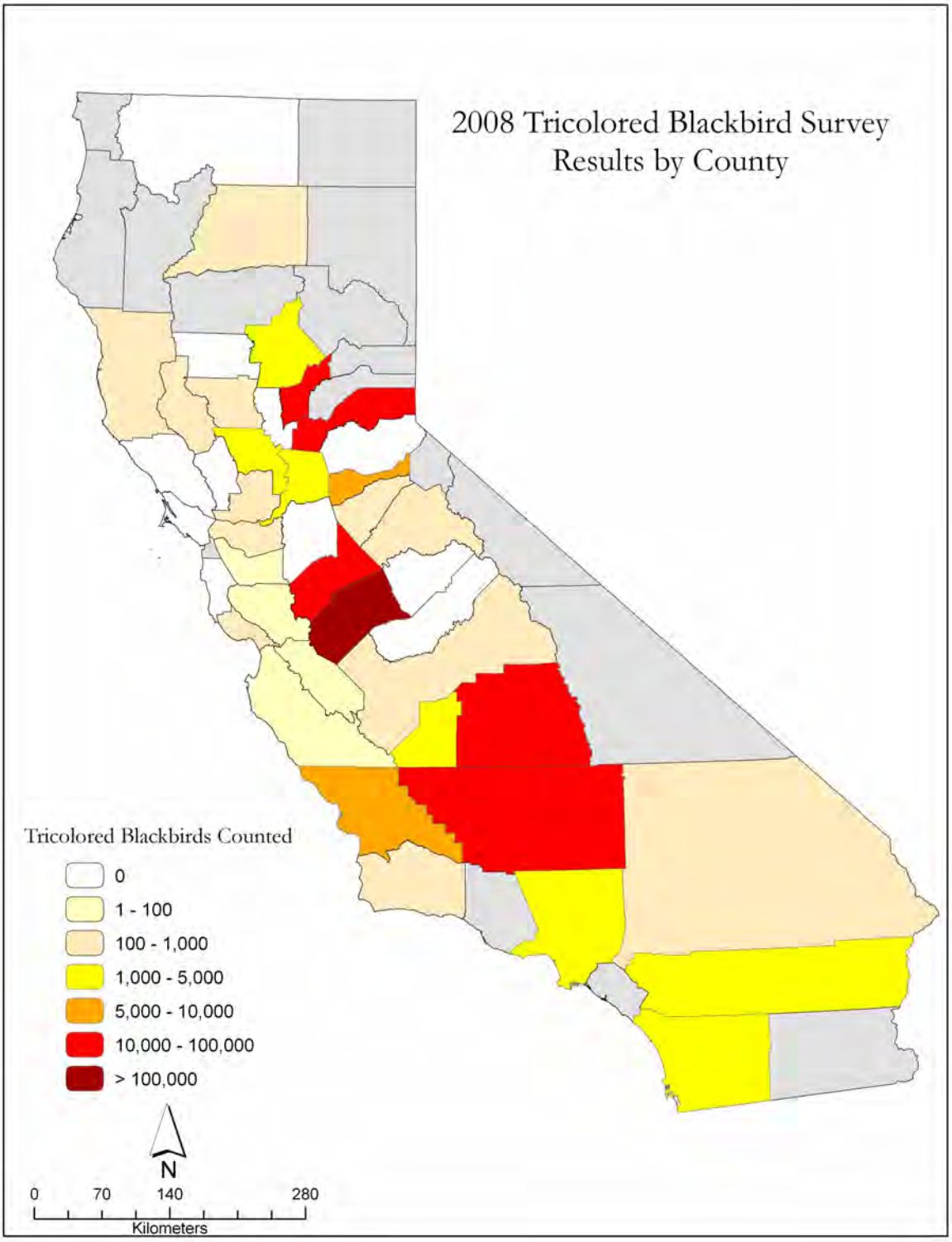


Figure 3. Percent colonies and birds using different breeding substrates in 2008.

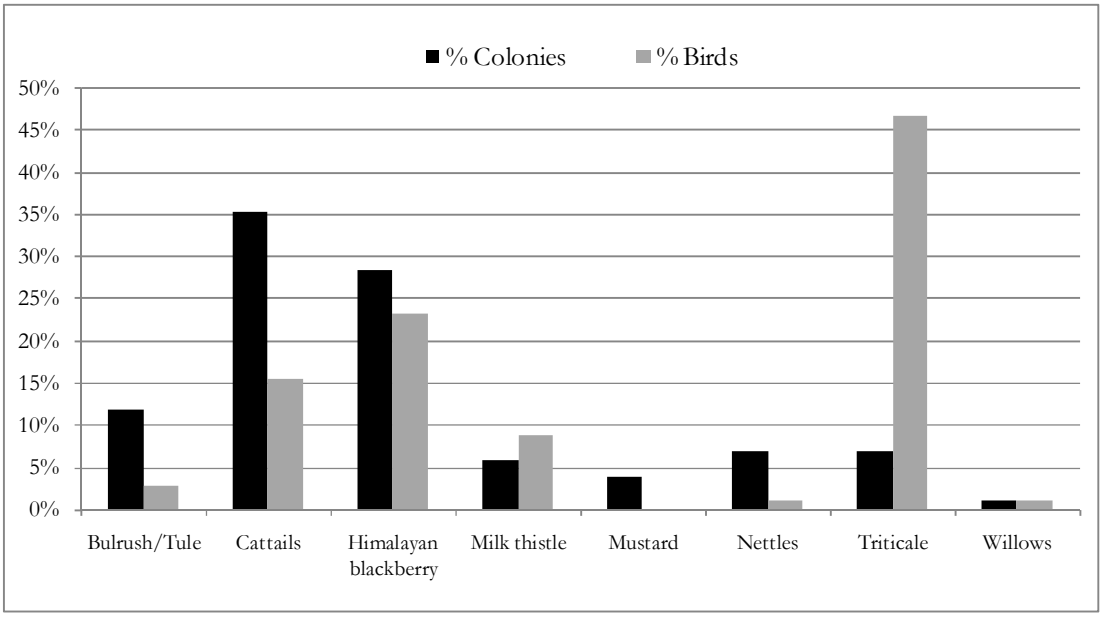


Figure 4. Number of birds and colonies at locations associated with stored grains in 2008.

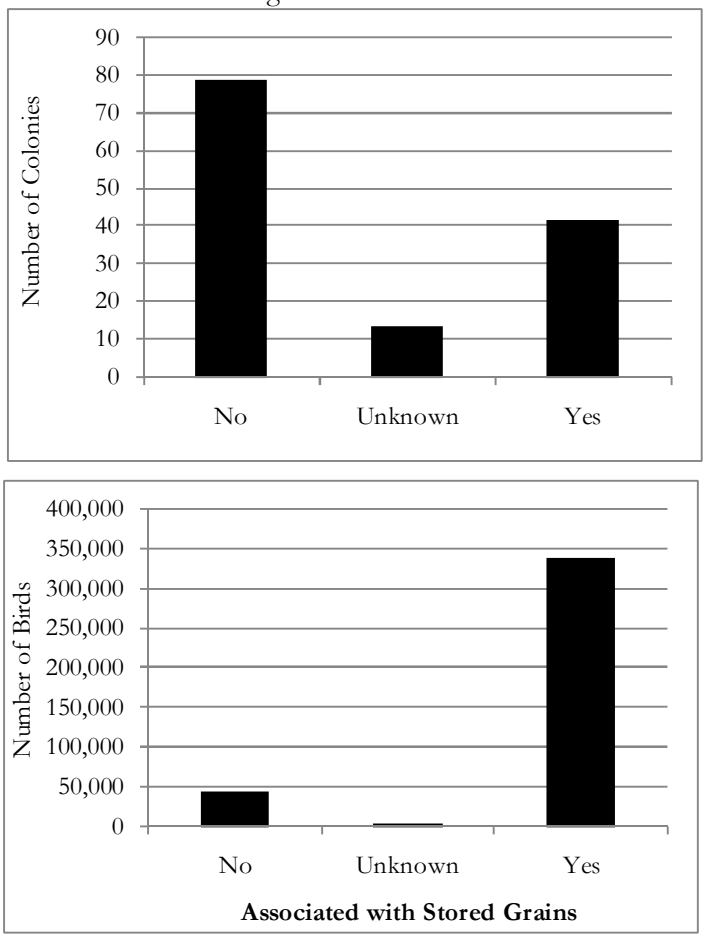


Figure 5. Number of birds counted as a function of sites visited (points labeled with year of survey).

*Estimated number of sites based on average number of colonies detected per site visited.

Figure 6. Population size estimates from statewide surveys 1994 – 2008

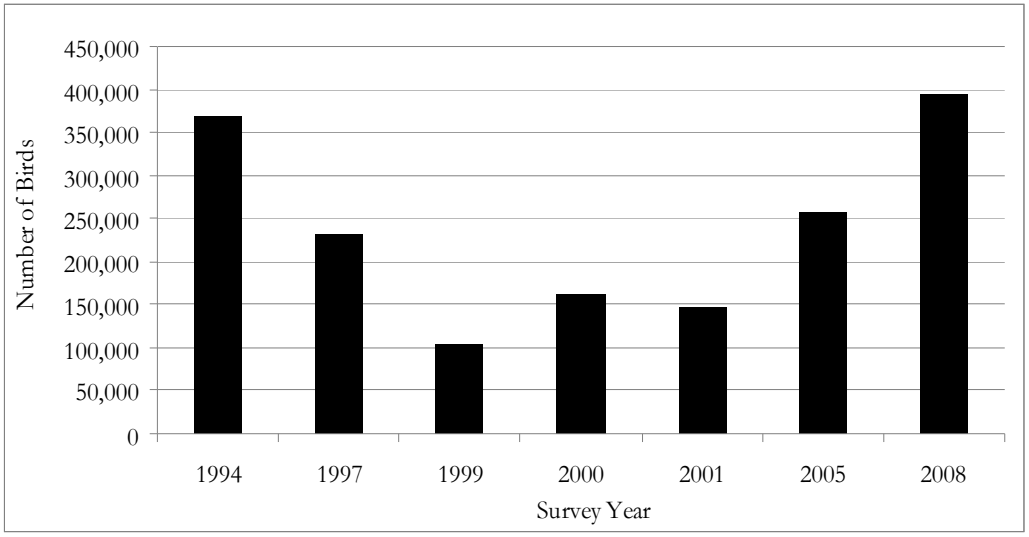


Figure 7. Precipitation and El Nino Southern Oscillation Index over years between statewide Tricolored Blackbird Surveys

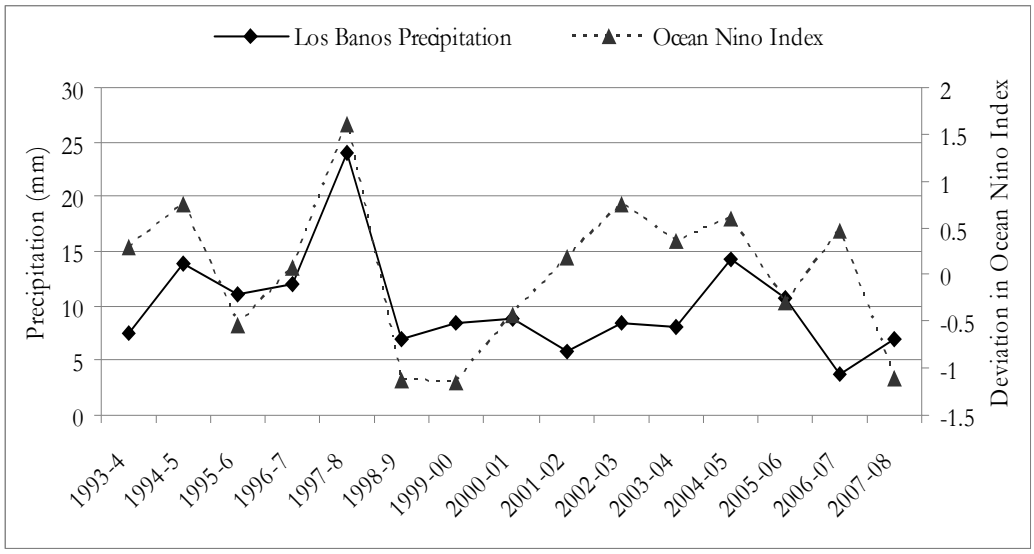


Figure 8. Proportion of Tricolored Blackbird population detected in Sacramento Valley, San Joaquin Valley and southern California 1994 – 2008.

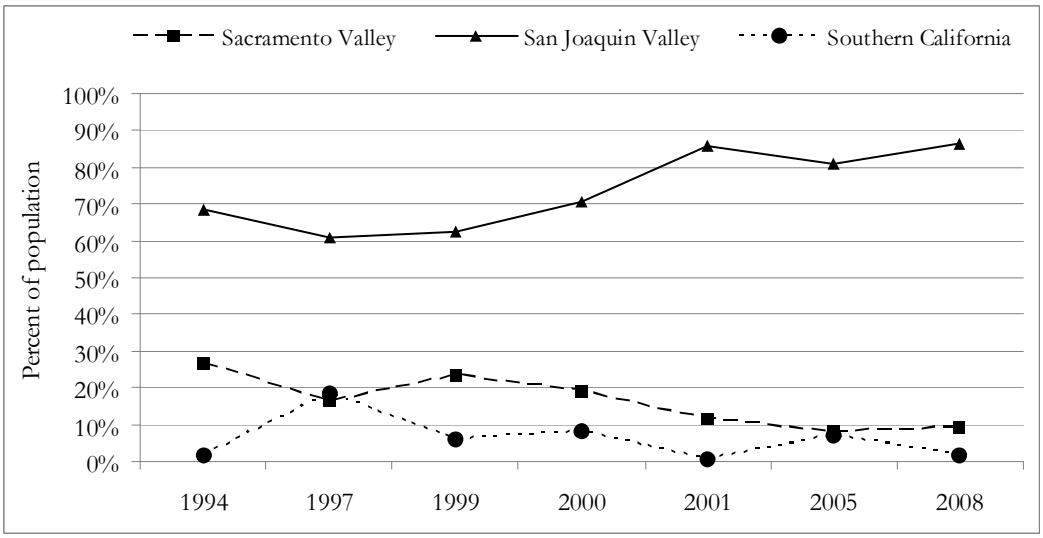
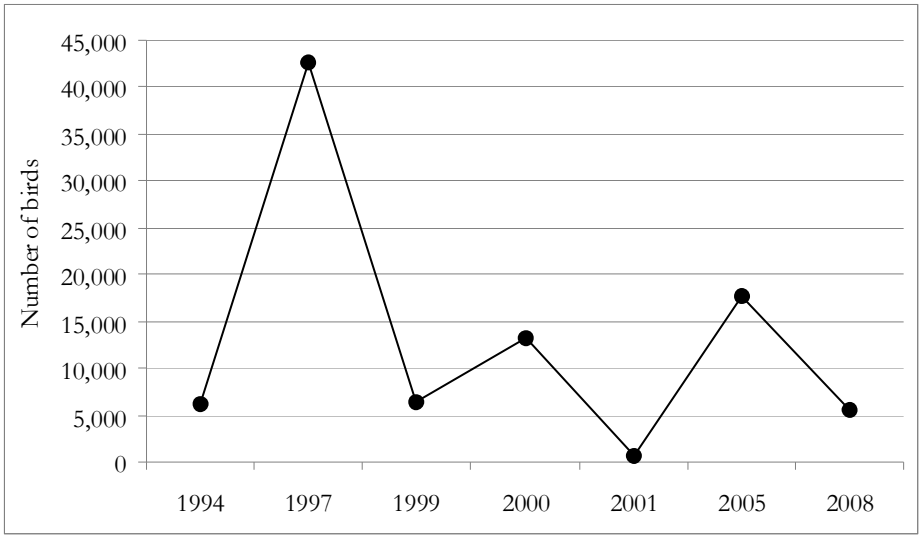


Figure 9. Southern California Tricolored Blackbird survey population estimates 1994 – 2008



Appendices

Appendix 1. Survey Protocol provided to volunteers

2008 Tricolored Blackbird Survey Protocol

Thank you for volunteering to participate in the 2008 Tricolored Blackbird Survey. This survey is conducted every three years in order to estimate population size and track changes in the status of the Tricolored Blackbird population. This information is critical for guiding our conservation efforts and could not be accomplished without your help and the extensive efforts of other citizen scientists across the state. The following protocol outlines the methods to be used during the survey and how to report your observations.

Our goal is to develop the best estimate of the statewide population as possible. The more areas that are surveyed where the presence and number (or absence) of Tricolored Blackbirds is recorded, the better the estimate will be.

I. Scouting

It is very useful to check on nearby sites and search the surroundings before the dates of the official survey. This will streamline the survey and allow you to spend more time at the colonies that require the most effort to observe and count. By April 1 most colonies will be active for their first round of breeding. In the more southerly colonies some nests will already have hatched young. It appears that 2008 is an 'early' year for Tricolors. Estimating the colony size and observing the behavior and habits of the Tricolored Blackbirds at this point is interesting and good practice.

II. Timing

The 2008 survey window is April 25th to 27th. All observations that will be reported as part of the 2008 survey should be carried out on one or more days between April 25 and 27. Tricolored Blackbirds and colonies can shift locations over relatively short periods of time during the breeding season. Making sure that a comprehensive count is made in a narrow time window helps ensure we are not counting the same birds more than once.

Subsequent observations at any future date should also be noted and can be submitted via the Tricolored Blackbird Portal (http://tricolor.ice.ucdavis.edu).

III. Survey Locations and Priorities

Breeding colony locations are on maps provided to you were all discovered on previous censuses dating back to the early 1990's, or incidentally discovered and documented at other times. Some sites were found during the last statewide census in 2005. Each volunteer team has been asked to survey a specific area within their county and, in most cases, to visit specific colony sites that were reported in 2005. The following are the areas that should be surveyed in priority order:

> Priority One: visit and document the number (or absence) of Tricolored Blackbirds at assigned colonies and in the immediate vicinity of those colonies. These are those 2005 colony sites that you have been specifically asked to survey and are labeled with the colony name on the maps that have been provided.
>
> Priority Two: survey suitable habitat in areas around assigned colonies and in areas where Tricolored Blackbirds have been reported or seen before, as indicated by the unlabeled points on the maps provided and/or based on observations by you and/or other local experts.
>
> Priority Three: survey other areas in the county where there is suitable habitat.

Ideally you are already familiar with these former colony locations, but if not, the locations of 2005 colonies and other reported sites should be easy to find from the maps we provide.

IV. Survey Protocol

Viewing the colony

In general, it is best to avoid any disturbance of nesting birds, as the disturbance can cause nest failure. This is especially true for Tricolored Blackbirds and other colony nesting species, since pairs are in close proximity to each other, and single disturbance can cause the failure of many nests. Under no circumstances should volunteers enter the colony. Colonies should be surveyed from a distance at which the birds are unaffected by the surveyor's presence. Since colonies may be located in a variety of contexts, it is up to the observer to determine how close is too close. Under most circumstances, colonies can be surveyed from just outside the boundaries of the vegetation in which the birds are nesting. The majority of sites will be readily viewable from public roads and allow close and thorough study. Sometimes roadsides provide an elevated view of a colony, and thus a better perspective from which to estimate colony dimensions and numbers of birds.

Private property should also be respected. Do not enter private property unless you have received permission. A Fact Sheet about the survey has been prepared and is available for you to give interested landowners (or others) to inform them about the survey.

Duration

Be sure to record the amount of time you spend at each colony site (including those where there are no Tricolored Blackbirds this year). Spend as much time at each colony as you need to get your best estimate of the number of birds. If after 10 to 15 minutes at a known colony site you have not seen any Tricolored Blackbirds, move on to survey new sites or areas. If Tricolored Blackbirds are present, use your own judgment about how much time to spend at the colony. In general, prolonged viewing of a colony will improve your estimate and the larger the colony the more time should be spent. This is particularly true for very large colonies (> 10,000) where it may take some time to evaluate the number of birds. With such large colonies, the more time you spend at the colony, the more the apparent chaos will give way to a semblance of order, enabling you to better estimate the size of the colony and gather observations of singing males, nest-building females, adults feeding chicks, or fledglings.

However, the time spent at one colony is at the expense of visiting more areas and documenting additional colonies. Do not spend too much time at small colonies where you can estimate the number of birds quickly. In this case, finding and counting new birds will be more valuable for the statewide estimate.

Colony Size

A Tricolored Blackbird colony can range from 20 birds to 100,000 or more birds. For this survey, all estimates will be based on visual counts of the birds at a colony. For small colonies, precise counts can be made, but in larger colonies a visual estimate will be necessary. The method used should be indicated on the data sheet.

<u>Precise Counts</u>

For small colonies (approximately less than 200 birds), a precise count of the number of birds will usually be feasible. With care, this should provide a very precise estimate of the number of birds present.

<u>Scanning Surveys</u>

When large numbers of birds are streaming by, dropping into vegetation, and are otherwise extremely active, precise counts will be impossible.

To estimate the number of birds in large groups during this survey there are two ways to estimate number depending on whether birds are flying by or within the colony.

1) *Within the colony*: for birds that are perched or flying around within the colony, it is effective to count the number of birds that fill a specific, repeatable field of view, such as the field of view in your binoculars. Within this field of view, either count precisely or by fives or tens for more dense concentrations, to obtain a reasonable estimate of the number of birds within that view. Then, multiply that number by the number of fields of view that comprise the entire flock or colony.

2) *Flying in Transit*: Depending on the time of day and colony status, there may be streams of birds flying between the colony and an off-colony food or water source. In this case, the number of birds in these flight paths can be estimated by counting the number of birds that move by in a given amount of time and multiplying this by the total time it takes for the flock to pass.

In many cases observers will need to employ both strategies. Position yourself somewhere with good visibility and use a timed count of the flying birds as they leave the colony. Once the flow of leaving birds has dropped off, then conduct a scanning count of the visible birds remaining within the colony itself. The scanning count of the colony should be repeated a few times to improve the estimate. Add the estimate of birds flying away from the colony to the count of birds within the colony. There is space on the data sheet to record your best estimate of birds, as well as what you think the minimum and maximum number of birds are at the colony. These minimum and maximum estimates will give us some sense of how accurate you feel your best estimate is.

Estimating the size of large colonies can be very challenging, and for some, frustrating. Remember that you are providing us with an approximation of colony size and not an exact count. All large colonies that you find will be revisited by one or more experts, regardless.

Sex Ratio

The accuracy of the count will also depend on the sex ratio of birds observed and this depends on activity at the colony. Some colonies that are just forming will have both males and females active so that most individuals can be seen. Once incubation begins however, it will be mostly males that are seen. *This information is critical to record.* The data sheet includes space for specifying the ratio of males to females seen and whether the colony is active but quiet (indicating incubation may have begun). Tricolored Blackbird flocks often separate into groups of males and females. A quick estimation of the numbers in each sub-flock can be used to determine an overall sex ratio. Estimate the ratio of males to females in several sub-flocks or fields of view and average them to come up with an estimate.

Colony Observations

Locating new colonies and estimating colony sizes are the primary goals of the survey; however, the characteristics of colonies, the surrounding environment, and the behavior of the birds are all valuable for assessing the status and health of colonies.

Nest Substrate

Observers should record the nesting substrate of observed colonies. There is space on the data sheet to record both primary (dominant) and secondary substrates. Tricolored Blackbird native habitat consists of young, freshwater marsh dominated by tules or cattails, but they also nest in a variety of other vegetation types that provide enough structure and cover to build nests. In addition, they also now regularly nest in grain crops, particularly triticale fields in association with dairy farms. Likely substrate plants are: bulrush/tule, cattails, blackberry, milk thistle, nettle, and grains like triticale, wheat and barley. Other substrates include: willows, cottonwood, *Arundo*, desert olive, mustard, prickly lettuce, mule fat, coyote brush, raspberry, rice, tamarisk, and poison hemlock.

Colony Surroundings

In addition to locating and viewing the colony, it is useful to describe the surroundings. In addition to nesting substrate, Tricolored Blackbirds also require a source of open water and suitable foraging areas (e.g. upland pasture, grassland, and alfalfa). They can fly several miles to sources of abundant food (like farms with stored grains). Knowing about these locations will assist in future surveys and may help observers find additional breeding colonies as birds move between various nesting sites and a centralized food source. **Any stream of blackbirds is worth following!** On the data sheet, if source of water or stored grains are identified, please record the presence of stored grains nearby and the distance to water. Also, note the dominant land use surrounding the colony (type of agricultural crop, natural vegetation type, etc).

Colony Area

Observers should try to record the approximate length and width of the breeding substrate within the colony. These measures will be used to calculate the total area of the colony. Since breeding substrate often occurs in patches over a larger area, size estimation is approximate. Colony area will be used with what is known about the average nest density within Tricolored Blackbird colonies to develop a secondary estimate of the number of birds in the colony.

- *Measuring Width and Length:* Where possible, observers should pace out two sides of the colony, using strides that approximate one meter. Record the number of meters for these two sides on the data sheet.

- *Aerial Photos*: Using satellite photos that are provided, observers can highlight the boundaries of the colony being used. These marked-up photos should be sent in with paper copies of datasheets following the surveys. These will provide a means for mapping the extent and calculating the total area of colonies observed.

Behavior and Colony Status

Behavior of birds at a colony and the current activity at the colony are also important sources of information for understanding the seasonal timing of breeding and success of particular colonies. Important observations to record on the datasheet include:

- *Singing*: pronounced chorus of males heard singing at a colony
- *Carrying Nest Material*: females observed carrying nest material (e.g. grass)
- *Carrying Food*: adults observed carrying food (usually insects protruding from bill)
- *Colony Quiet*: if the colony is relatively quiet (no singing or large groups of males and females moving about) and primarily males are visible, this may indicate that incubation has begun and females are on nests.
- *Fledglings*: observed young birds in association with adults.

Mapping New Colonies

In order to better ensure that we record the location of new colonies accurately, please use the street and colony maps provided (or another map you have available and can copy) to mark the location of new colonies you find and visit. These will be stored and used later for data quality checking.

Survey Routes

Using the maps provided or other maps you have available to indicate the routes taken during the survey by highlighting the roads and areas surveyed. These should be sent in with the datasheets and aerial photos following the survey.

Appendix 2. 2008 Tricolored Blackbird Survey Report Form and Instructions

Visit Information

Date: _____ Time on Site: _____

Observer Name: _____

Telephone _____ Email: _____

Colony Information

Colony Name: _____

County Name: _____ Landowner/Contact: _____

Directions: _____

_____

Latitude _____ Longitude _____ Datum _____

Colony Size

Minimum # Birds _____ Type of Estimate: **Visual**

Best Estimate # Birds _____ Precision of Estimate: Scanning / Precise Count (circle one)

Maximum # Birds _____ Approximate Sex Ratio (Males/Females): _____

Colony Observations

Primary Nest Substrate: _____ Secondary Nest Substrate: _____

Nearby Stored Grains: Yes / No Dominant Surrounding Landuse: _____

Distance to water: _____ meters / feet (or N/A) Type of water: _____

Colony Width: _____ meters / feet Colony Length: _____ meters / feet

Carrying nest material Yes / No Singing Yes / No

Carrying Food Yes / No Colony Quiet Yes / No

Fledglings Yes / No

Notes

Date Entered in Tricolored Data Portal: Yes / No

2008 Tricolored Blackbird Survey Datasheet Instructions

One datasheet should be completed for each colony site visited, including if no birds were observed at a colony (record zero birds observed). Fill out each section as completely as possible.

Visit Information - Please provide the date, names of observers, contact information for one observer, and total time spent at that colony

Colony Information – Provide the accepted colony name, if known, or a descriptive name based on the location for colonies where the name is not known or it is a new colony. Provide the county where the colony is located and a detailed description of where the colony is located using cross streets, landmarks, and/or approximate mileage (e.g. 1.2 miles SE of intersection of Road 26 and Avenue 88). Record the latitude and longitude if possible. This can be done using a GPS in the field. Alternatively, coordinates can be obtained using a mapping program like Google Earth or when entering data in the Tricolored Blackbird Portal after the survey (see the survey protocol).

Colony Size – Provide your best estimate of the number of adults at the colony, as well as the minimum and maximum number of birds (as described in the survey protocol). Be sure to specify the precision of your estimate (precise count or a scanning estimate). Also, record an estimate the sex ratio (males/females) observed at the colony.

Colony Observations – Tell us whether there was a pronounced song chorus (most males singing), whether you saw females carrying nest materials into the colony, whether you saw adults bringing food for nestlings into the colony, and whether you observed fledglings. Please tell us in what substrate(s) the nests are constructed, and estimate the total length and width of substrate available. Areas will be automatically calculated. Please estimate the distance to nearest water and the type of water (e.g., marsh, stock pond, drainage ditch) and tell us whether you saw the breeding birds utilizing stored grains (e.g., cattle or horse feed). Lastly, describe the surrounding land uses, including the kinds of crops, where possible and appropriate. Place any additional notes in the Notes field.

Maps – Use the street and colony location maps provided to highlight areas/roads surveyed and the location of any new colonies located. These should be sent in with the datasheets.

Aerial Photos – If you were provided with aerial photos of specific colonies, please highlight the colony boundaries (nesting area used) on those photos and also send those in with the datasheets.

Data Submittal

1) Review datasheets to ensure all required information is recorded.
2) Enter these data into the Tricolored Blackbird Portal (http://tricolor.ice.ucdavis.edu). This has been developed as the online clearinghouse for data entry and information exchange about Tricolored Blackbirds. Instructions for data entry should have been provided; if needed they can be downloaded from the website. Be sure to indicate on the datasheet that the observation has been entered online.
    a. If you cannot enter your survey data online, skip to step 3.
3) Make copies of your datasheets and maps (this is not required, but will be very valuable if the datasheets are lost in the mail).
4) Mail the paper datasheets, maps with new colonies marked on them, and aerial photos with colony boundaries clearly marked to the coordinator:

    Rodd Kelsey
    Audubon California
    5265 Putah Creek Road
    Winters, CA 95694

Appendix 3. 2008 Tricolored Blackbird Survey observations at known historic colony sites.

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/27/2008	Alameda	Altamont Creek	0	Cattails	No					Private	Richard Cimino
4/27/2008	Alameda	Ames and Dalton	27	Cattails	Unknown					Private	Richard Cimino
4/27/2008	Alameda	Broadmoor Pond	0	Cattails	No						Richard Cimino
4/27/2008	Alameda	Dagnino Road	0	Cattails	Unknown					Private	Richard Cimino
4/27/2008	Alameda	Dyer Road	0	Milk thistle	Unknown						Richard Cimino
4/27/2008	Alameda	Laughlin Road	0	Cattails	No					Private	Richard Cimino
4/27/2008	Alameda	North Flynn Road	0	Cattails	No					Private	Richard Cimino
4/27/2008	Alameda	Shadow Cliffs Lake	0	Cattails	Unknown					Public	Richard Cimino
4/27/2008	Alameda	Vallecitos Lane	0		Unknown					Private	Richard Cimino
4/26/2008	Amador	Buena Vista	400	Cattails	Yes	No			No	Private	Rodd Kelsey
4/26/2008	Amador	Martin Lane	200	Cattails	No	Yes	Yes	No	No	Private	Rodd Kelsey
4/26/2008	Amador	Old Stockton Road	6000	Himalayan blackberry	No	Yes	No	No	No		Rodd Kelsey
4/26/2008	Butte	Lone Tree Road	80	Himalayan blackberry	No	Yes	Yes	No	No	Private	William Haas
4/26/2008	Butte	Rio Bonito	127	Himalayan blackberry	No	No	No	No	No		William Haas
4/26/2008	Butte	Ross Lane	0	Himalayan blackberry	No	No	No	No	No	Private	William Haas
4/26/2008	Butte	West Biggs	84	Cattails	Unknown	Yes	Yes	No	No		William Haas
4/26/2008	Butte	West Biggs #2	2250	Cattails	Unknown	Yes	Yes	No	No		William Haas
4/25/2008	Calaveras	Altaville - Dogtown Rd	110	Himalayan blackberry	No	No	No	Yes	No	Private	Dan Airola
4/25/2008	Calaveras	Dogtown Road/Lakeside Dr.	15	Bulrush/Tule	No	No	No	No	No	Private	Dan Airola
4/25/2008	Calaveras	Rock Creek Road	260	Himalayan blackberry	No	No	No	No	No		Dan Airola
4/25/2008	Colusa	Acre Farms	0	Bulrush/Tule	No					Private	Ted Beedy
4/25/2008	Colusa	Capital Outing Club	0	Cattails	No						Ted Beedy
4/25/2008	Colusa	Delevan NWR- Northeast Corner	0	Cattails	No					Public	Mike Wolder
4/25/2008	Colusa	Delevan T21:2	0	Cattails	No					public	Mike Wolder
4/25/2008	Colusa	Delevan T43	0	Cattails	No					public	Mike Wolder
4/25/2008	Colusa	East Park Reservoir	1	Cattails	No					Public	Ted Beedy
4/25/2008	Colusa	Pioneer Duck Club	150	Cattails	No						Ted Beedy
4/25/2008	Colusa	Pioneer Duck Club West Pond	0	Cattails	No						Ted Beedy
4/25/2008	Colusa	Steidlmayer	0	Wild rose	No					Private; Steidlmayer	Ted Beedy
4/27/2008	Contra Costa	Byron Hot Springs Road	200	Bulrush/Tule	Unknown	Yes		Yes	No	unknown	Mike Perlmutter

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/27/2008	Contra Costa	Southwest Byron	150		Unknown	No		Yes		Public	Mike Perlmutter
4/26/2008	Fresno	4 Mile Slough	1000		Yes					Private	Kevin Enns-Rempel
4/25/2008	Fresno	Little Panoche Reservoir	0		No						Krista Tomlinson
4/26/2008	Fresno	Producer's Dairy	0	Triticale	Yes						Kevin Enns-Rempel
4/26/2008	Fresno	Yuba-Whitesbridge	0		Yes						Kevin Enns-Rempel
4/25/2008	Kern	Aunt Ruth - Bonnie's Pond	11		No	No	No	Yes			Jesse Grantham
4/25/2008	Kern	Aunt Ruth - Kristofik Nettles	0		No						Jesse Grantham
4/25/2008	Kern	Aunt Ruth - Two Cottonwoods	19		No	No	No	No	No		Jesse Grantham
4/25/2008	Kern	Branch Park Pond	50	Cattails	No	No	No	Yes	No		Jon Feenstra
4/26/2008	Kern	Canebrake Ecological Reserve	70		No						Carlie Henneman
4/26/2008	Kern	Costa's Dairy	60000	Triticale	Yes	No	No	Yes	Yes	Private	Scott Frazer
4/26/2008	Kern	ECLA Pond	2500		Yes		No	Yes	Yes		Scott Frazer
4/26/2008	Kern	El Cinco Duck Club	2000	Cattails	Yes	Yes	No	Yes	No	Private	Scott Frazer
4/26/2008	Kern	El Pato Loco Duck Club	0		Yes						Scott Frazer
4/23/2008	Kern	Hacienda	0	Mesquite	No					Boswell Corp.	Scott Frazer
4/26/2008	Kern	Hafenfeld Ranch	0		Unknown						Bob Barnes
4/24/2008	Kern	Kern County Water Agency Well 6-03	0		No						Dave Hardt
4/22/2008	Kern	Kern NWR Fowler Canal	0		No						Pam Williams
4/25/2008	Kern	Kern NWR Unit 1	0		No						Pam Williams
4/24/2008	Kern	Kern River Bridge/I-5	0		No						Dave Hardt
4/22/2008	Kern	Kern River Channel #1	0		No						Pam Williams
4/22/2008	Kern	Kern River Channel #2	0		No						Pam Williams
4/24/2008	Kern	Kern River Parkway	0		No						Dave Hardt
4/24/2008	Kern	Kern Water Bank First Cattails	0	Cattails	Yes						Dave Hardt
4/24/2008	Kern	Kern Water Bank Nettles	0	Nettles	Yes						Dave Hardt
4/24/2008	Kern	Kern Water Bank No. 1	0	Nettles	Yes					Kern Water Bank Authority	Dave Hardt
4/24/2008	Kern	Kern Water Bank No. 2	0	Nettles	Yes					Kern Water Bank Authority	Dave Hardt
4/24/2008	Kern	Kern Water Bank No. 3	0	Nettles	Yes					Kern Water Bank Authority	Dave Hardt
4/24/2008	Kern	Kern Water Bank No. 4	0	Nettles	Yes					Kern Water Bank Authority	Dave Hardt
4/24/2008	Kern	Kern Water Bank No. 5	0	Nettles	Yes					Kern Water Bank Authority	Dave Hardt

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/24/2008	Kern	Kern Water Bank No. 6	0	Nettles	Yes					Kern Water Bank Authority	Dave Hardt
4/24/2008	Kern	Kern Water Bank No. 7	0	Nettles	Yes					Kern Water Bank Authority	Dave Hardt
4/26/2008	Kern	Lake Isabella	85								Bob Barnes
4/26/2008	Kern	Lawrence Duck Club	600	Cattails	Yes	No	No	No	No	Private	Scott Frazer
4/22/2008	Kern	Poso I	0	Triticale	Yes						Scott Frazer
4/22/2008	Kern	Poso II	0	Triticale	Yes						Scott Frazer
4/25/2008	Kern	Red Lake Nettles	7	Nettles	Unknown	Yes	Yes	No	No	USFWS-Bittercreek NWR	Jesse Grantham
4/25/2008	Kern	Spanish Spring Canyon	650		No	No	No	Yes	No		Jesse Grantham
4/26/2008	Kern	Sprague Ranch	0								Carlie Henneman
4/25/2008	Kern	Tehachapi #12 - Sawyer Lake	20	Bulrush/Tule	No	Yes	Yes	No	No		Jean Moore
5/1/2008	Kern	Tule Road	1		No	Yes					Dawn Bradley
4/22/2008	Kern	West Poso	0	Triticale	Yes					Harvey Boschma	Scott Frazer
4/23/2008	Kern	Wildwood Road	0	Cattails	Yes						Scott Frazer
4/25/2008	Kern	Wind Wolves: Echo Canyon	400	Nettles	No	No	No	Yes	No		Scott Frazer
4/25/2008	Kern	Wind Wolves: Echo Flat	4	Nettles	No	No	No	Yes	No		Scott Frazer
4/25/2008	Kern	Wind Wolves: Little Lobo	1500	Nettles	No	No	No	Yes	No		Scott Frazer
4/25/2008	Kern	Wind Wolves: Muddy Creek	0	Nettles	No						Scott Frazer
4/25/2008	Kern	Wind Wolves: Sag Pond	0	Cattails	No						Scott Frazer
4/25/2008	Kern	Wind Wolves: Santiago Springs	1700	Nettles	No	No	No	Yes	No		Scott Frazer
4/25/2008	Kern	Wind Wolves: West Gate	0		No						Scott Frazer
4/23/2008	Kings	Dairy Avenue	0	Himalayan blackberry	Yes						Scott Frazer
4/25/2008	Kings	Naval Air Station Lemoore II	2500	Cattails	No	Yes	Yes	No	No	Private	Tim Kroeker
4/23/2008	Kings	Utica Avenue	0	Triticale	Yes					Private	Scott Frazer
4/25/2008	Lake	Adobe Creek	53	Cattails	No	No	No	Yes	Yes		George Chaniot
4/25/2008	Lake	Highland Springs Road	38	Cattails	Unknown	Yes	No	Yes	Yes	Private	George Chaniot
4/25/2008	Lake	Lyons Creek	620	Cattails	No	Yes	No	Yes	No		George Chaniot
4/26/2008	Los Angeles	Fairmont Reservoir	30		No	No	No	Yes	No		Kimball Garrett
4/25/2008	Los Angeles	Gorman Post Road	40	Nettles	No						Vernon Benhart
4/25/2008	Los Angeles	Holiday Lake	550	Bulrush/Tule	No	Yes	Yes		No		Vernon Benhart
4/25/2008	Los Angeles	Lake Palmdale	350	Cattails	No	Yes	No	Yes	No		Jon Feenstra
4/26/2008	Los Angeles	Munz Ranch Aqueduct	100	Nettles	No	No	No	Yes	No		Kimball Garrett
4/26/2008	Los Angeles	Quartz Hill Detention Basin, Ave L west of 60th St. West	200	Cattails	No	No	No	Yes	No	Private	Kimball Garrett

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/25/2008	Madera	Avenue 26	0		No						Laura Colton
4/26/2008	Madera	Highway 145	0		No						David Garza
4/26/2008	Madera	Milktime Dairy	117	Triticale	Yes						Laura Colton
4/26/2008	Madera	Millerton Road	0	Milk thistle	No						David Garza
4/25/2008	Madera	Road 29	0	Milk thistle	No						Laura Colton
4/25/2008	Madera	Road 400	0	Milk thistle	No						Laura Colton
5/1/2008	Mendocino	Eastside Road Potter Valley	610	Himalayan blackberry	Unknown	Yes	No	Yes	No	Private vineyard pond	George Chaniot
4/27/2008	Mendocino	Fetzer	62	Cattails	No	Yes	No	No	No	Private	George Chaniot
4/26/2008	Mendocino	McGuire Hill	53	Cattails	No	Yes	No	No	No		George Chaniot
4/27/2008	Mendocino	Potter Valley	110	Cattails	No	No	No	Yes	No		George Chaniot
4/27/2008	Mendocino	Westside Road Potter Valley	0	Himalayan blackberry	Unknown					Private, Christmas Star Ranch, 707-743-2220	George Chaniot
4/27/2008	Merced	Arena Plains Unit, Merced NWR - Bear Creek	1500	Himalayan blackberry	No	Yes	No	No	No	U.S. Fish and Wildlife Service	Dennis Woolington
4/25/2008	Merced	Basalt Road	500	Nettles	No	Yes	No	Yes	No		Lara Sparks
5/2/2008	Merced	Central American 1	2000	Himalayan blackberry	Yes					Private	Robert Meese
5/2/2008	Merced	Central American 2	1000	Himalayan blackberry	Yes					Private	Robert Meese
4/25/2008	Merced	Crane Ranch	50000	Himalayan blackberry	Yes	Yes	Yes	Yes	Yes	Private	Robert Meese
4/26/2008	Merced	Dickenson Ferry	0	Triticale	Yes						John Fulton
4/28/2008	Merced	El Nido Road	25000	Triticale	Yes					Private	Robert Meese
4/25/2008	Merced	Homen Dairy	0	Triticale	Yes					Private	Dennis Woolington
4/25/2008	Merced	Honey Lake	33000	Cattails	Yes	No	Yes	Yes	No	Private	Lara Sparks
4/25/2008	Merced	Le Grand Mine	0		No						Linda Connolly
4/25/2008	Merced	Lisbon Road	100	Himalayan blackberry	Yes	No	No	No	No	Private	Robert Meese
4/25/2008	Merced	Los Banos Wildlife Area 42	9000	Cattails	Yes	Yes	No	Yes	No	Public	Lara Sparks
4/27/2008	Merced	McNamara Road Slough	0		Yes					Private	John Fulton
4/25/2008	Merced	Merced NWR Duck Slough Farmfield 1	16500	Milk thistle	Yes	Yes	Yes	No	No	U.S. Fish and Wildlife Service	Dennis Woolington
4/25/2008	Merced	Merced NWR: East Farmfield	0	Mustard	Yes						Dennis Woolington

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/25/2008	Merced	Merced NWR: West Farmfield	4000	Milk thistle	Yes	Yes	No	Yes	No	Public	Dennis Woolington
4/25/2008	Merced	North Grasslands Wildlife Area - China Island Unit	0	Milk thistle	Yes					Public	Lara Sparks
4/25/2008	Merced	North Grasslands Wildlife Area - Salt Slough Unit	0	Milk thistle	Unknown					Public	Lara Sparks
4/26/2008	Merced	Northrup Road	0	Himalayan blackberry	Yes						John Fulton
4/25/2008	Merced	O'Neill Forebay	0	Himalayan blackberry	No						Lara Sparks
4/25/2008	Merced	Owens Creek	10000	Milk thistle	Yes	Yes	No	Yes	No		Linda Connolly
4/25/2008	Merced	Oxbow	0		No						Lara Sparks
4/25/2008	Merced	Plainsburg Road	0	Mustard	Yes						Linda Connolly
4/25/2008	Merced	Shy Street	500	Himalayan blackberry	Yes	Yes	No	Yes	No	Private	Lyann Comrack
4/26/2008	Merced	Stevinson	48		Yes	No	No	No	No	Private	John Fulton
4/25/2008	Merced	Volta Lake Marsh	1500	Cattails	Yes	No	No	Yes	Yes	Private	Lara Sparks
4/26/2008	Monterey	Laguna Seca	0	Cattails	No					Monterey County	Troy Rahmig
4/27/2008	Monterey	Robinson Canyon	50	Cattails	No	Yes	No	No	No		Troy Rahmig
4/25/2008	Placer	Caperton and Sterling Parkway	1500	Himalayan blackberry	Yes					Private (City of Rocklin)	Deren Ross
4/25/2008	Placer	Dowd & Dalbey	0	Cattails	No						Deren Ross
4/25/2008	Placer	Dowd and Waltz	5000	Himalayan blackberry	Yes	Yes	Yes			Private	Deren Ross
4/25/2008	Placer	Gladding Hwy. 65	350	Himalayan blackberry	Yes	Yes	Yes			Private	Deren Ross
4/25/2008	Placer	Gleason Ranch Sunset Blvd. West	4000	Himalayan blackberry	Yes	Yes	Yes			Private	Deren Ross
4/25/2008	Placer	Little Ben	250	Himalayan blackberry	Yes					Private	Deren Ross
4/25/2008	Placer	Twelve Bridges and Hwy. 65 West	200	Himalayan blackberry	Yes	Yes	Yes			Private	Deren Ross
4/27/2008	Riverside	Diamond Valley Reservation	0		No						Crispin Rendon
4/27/2008	Riverside	Fisherman's Retreat	400	Cattails	No	Yes	Yes	Yes	No	Halo Resorts Fisherman's Retreat	Crispin Rendon
4/25/2008	Riverside	Hemet Water Treatment Plant	0	Cattails	No	No	No	Yes	No	Eastern Municipal WD	Tom Paulek

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/27/2008	Riverside	Lake Riverside Estates	500		No	Yes	Yes	Yes	Yes		Crispin Rendon
4/27/2008	Riverside	Lake Skinner	200	Bulrush/Tule	No	No	No	Yes	No	Riverside County Park	Crispin Rendon
4/26/2008	Riverside	Perris Airport	0	Mustard	No						Tom Paulek
4/25/2008	Riverside	Ramona Farms	0	Triticale	Yes	No	No	No	No		Tom Paulek
4/27/2008	Riverside	San Jacinto WA: Davis Unit	0	Mallow	No					State of California	Tom Paulek
4/27/2008	Riverside	San Jacinto WA: Potrero Unit	250		No	No	Yes	Yes	No		Tom Paulek
4/27/2008	Riverside	Winchester Slough	800	Cattails	Unknown	No	No	Yes	Yes	Unknown	Crispin Rendon
4/27/2008	Sacramento	Boys Ranch	0	Cattails	No					Herb Garms; Private	Ken Hashagen
4/28/2008	Sacramento	Coe Lane	200	Himalayan blackberry	No	No	No	No	No	not known	Laura Valoppi
4/27/2008	Sacramento	Coyote Creek at Scott Road	0	Cattails	Unknown					Public	Liz Cook
4/27/2008	Sacramento	Deer Creek at Scott Road	0	Cattails	Unknown					Public	Liz Cook
4/28/2008	Sacramento	Eagle's Nest	0	Cattails	No					Private	Liz Cook
4/28/2008	Sacramento	Eagles Nest Road-West	0	Himalayan blackberry	Unknown					Public	Liz Cook
4/27/2008	Sacramento	East of Sunrise	0		No						Laura Valoppi
4/27/2008	Sacramento	Elder Creek	700	Himalayan blackberry	Yes						Liz Cook
4/27/2008	Sacramento	Five Palm Trees	500	Himalayan blackberry	No	Yes	No	No	No	Private	Laura Valoppi
4/28/2008	Sacramento	Florin Road	0	Milk thistle	Unknown					Triangle Rock Aggregate	Liz Cook
4/28/2008	Sacramento	Florin Road at Eagles Nest Road	0	Cattails	Unknown					Public	Liz Cook
4/28/2008	Sacramento	Florin Road at Florencia Lane	0	Himalayan blackberry	Unknown					Public	Liz Cook
4/25/2008	Sacramento	Hadlesville Creek	425		No	No	No	No	No		Dan Gifford
4/27/2008	Sacramento	Knox Road	0	Himalayan blackberry	Yes						Laura Valoppi
4/28/2008	Sacramento	Laguna Creek at Eagles Nest Road	0	Himalayan blackberry	Unknown					Public	Liz Cook
4/27/2008	Sacramento	Latrobe/Wetzel-Oviatt Rd	0		No						Ken Hashagen
4/28/2008	Sacramento	Lopez Ag. Services	0	Milk thistle	No					Private; Lopez Ag. Services	Liz Cook
4/27/2008	Sacramento	Manica's Pond	0	Cattails	Yes					Private	Laura Valoppi
4/27/2008	Sacramento	Melody Farms	500	Himalayan blackberry	Yes	No	No	No	No	Private	Laura Valoppi

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/27/2008	Sacramento	Prairie City	0		No						Ken Hashagen
4/26/2008	Sacramento	Rancho Seco Vineyard	100	Himalayan blackberry	No	No	No	No	No	Private	Dan Gifford
4/27/2008	Sacramento	Readymix Pond	0	Cattails	No					Teichert Readymix	Laura Valoppi
4/26/2008	Sacramento	Scott Road	0	Himalayan blackberry	Unknown					Public	Liz Cook
4/27/2008	Sacramento	Scott Road Pond	450	Bulrush/Tule	No	No	No	No	No	Private	Ken Hashagen
4/28/2008	Sacramento	Sloughouse	1		No						Laura Valoppi
4/27/2008	Sacramento	Southwest Scott Road	0	Himalayan blackberry	Unknown					Public	Liz Cook
4/28/2008	Sacramento	Triangle Rock Products No. 1	0	Milk thistle	No					Triangle Rock Products	Liz Cook
4/28/2008	Sacramento	Triangle Rock Products No. 2	0	Milk thistle	No					Triangle Rock Products	Liz Cook
4/28/2008	Sacramento	Triangle Rock Products, No. 3	0		Unknown					Private	Liz Cook
4/27/2008	Sacramento	Tudesco Ranch	100		No	Yes	No	No	No		Ken Hashagen
4/27/2008	Sacramento	Waegell	0	Bulrush/Tule	No					Waegell Family	Laura Valoppi
4/27/2008	Sacramento	West Scott Road	0	Himalayan blackberry	Unknown					Public	Liz Cook
4/27/2008	Sacramento	White Rock Road	0		No						Ken Hashagen
4/25/2008	Sacramento	Willow Creek	0		No						Dan Gifford
4/25/2008	San Benito	Panoche Road 1	0		No					Private	Krista Tomlinson
4/25/2008	San Benito	Panoche Road 2	0		No						Krista Tomlinson
4/25/2008	San Benito	Panoche Road 3	26	Mustard	Yes	Yes	No	No	No	Private	Krista Tomlinson
4/25/2008	San Benito	Panoche Road 4	40	Mustard	No	No	No	No	No	Private	Krista Tomlinson
5/1/2008	San Bernardino	Gravel Pit Newberry Springs	200	Cattails	No	No	No	Yes	No	Private	Tom Paulek
4/26/2008	San Bernardino	Mojave River at Victorville	0	Cattails	No					Private	Steve Myers
4/27/2008	San Bernardino	Newberry Springs Minneola Pond	500	Cattails	Unknown					Private	Bill Deppe
4/25/2008	San Diego	Barrett Junction	175	Bulrush/Tule	Yes	No	No	Yes	No	Private	Thomas Blackman
4/25/2008	San Diego	Boden Canyon Ecological Reserve Pond	0	Cattails	No					Public	Nancy Frost
4/25/2008	San Diego	Butterfield Stage Stop	0	Bulrush/Tule	No					Private	Gjon Hazard
4/25/2008	San Diego	Chihuahua Creek Confluence	250		No					Private	Gjon Hazard
4/27/2008	San Diego	Mesa Grande Road	7	Himalayan blackberry	No	No	No	No	No		Thomas Blackman
4/27/2008	San Diego	Pine Hills	0	Cattails	No					USFS	Thomas Blackman
4/25/2008	San Diego	Puerta La Cruz	50		No			Yes		Private	Gjon Hazard

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/25/2008	San Diego	Rancho Jamul Ecological Reserve Pond	161	Cattails	No	Yes	No	Yes	No	Public	Nancy Frost
4/25/2008	San Diego	Santa Ysabel Ranch	20	Himalayan blackberry	No	Yes	No	No	No		Gjon Hazard
4/25/2008	San Diego	Upper Otay Lake	375	Bulrush/Tule	No	No	No	Yes	No	Public	Thomas Blackman
4/25/2008	San Diego	Upper Sweetwater Reservoir	250	Cattails	No	Yes	Yes	Yes	No	Sweetwater Authority	Peter Famolaro
4/27/2008	San Diego	Warner Springs Hwy 79 and Hwy S2	67	Mustard	No	No	No	No	No	Vista Irrigation	Thomas Blackman
4/25/2008	San Joaquin	Comanche Reservoir	0	Cattails	No					Private	James Jones
4/26/2008	San Luis Obispo	Alamo Creek Bridge	0		No						Tom Edell
4/25/2008	San Luis Obispo	Antelope Grade Pond	400	Cattails	No	Yes	No	Yes	No	Private	Alan Schmierer
4/25/2008	San Luis Obispo	Cattle Drive Ranch Pond	12		Unknown	No	No	No	No	Private	Alan Schmierer
4/25/2008	San Luis Obispo	Cholame Valley Road Wetland	15	Cattails	No	Yes	No	No	No	Private	Alan Schmierer
4/26/2008	San Luis Obispo	Corbett Canyon	0	Cattails	Unknown					Private	Tom Edell
4/26/2008	San Luis Obispo	Creston Road	70		No	Yes	Yes	No	No	Private	Andrea Jones
4/25/2008	San Luis Obispo	Davis Road #1	4400	Willows	No	Yes	Yes	Yes	No	Private	Alan Schmierer
4/25/2008	San Luis Obispo	Grant Lake Intermittent Pond	0	Cattails	No					Private	Alan Schmierer
4/25/2008	San Luis Obispo	Highway 58 Pond	0	Cattails	Unknown					Private	Alan Schmierer
4/25/2008	San Luis Obispo	Highway 58 Pond #2	90	Cattails	No	Yes	No	No	No	Private	Alan Schmierer
4/21/2008	San Luis Obispo	Hwy 33 Cuyama Valley	0	Cattails	Unknown					Private	Tom Edell
4/25/2008	San Luis Obispo	Pinole Spring	0	Cattails	Unknown					Private	Alan Schmierer
4/28/2008	San Luis Obispo	River Road	750	Cattails	No	Yes	Yes	Yes	No	Private	Andrea Jones
4/26/2008	San Luis Obispo	Salinas River Wastewater Ponds	0	Cattails	No					Private	Andrea Jones
4/25/2008	San Luis Obispo	Sea West Ranch	5		No	Yes	No	No	No	Private	Greg Smith
4/25/2008	San Luis Obispo	Shell Creek Road #1	100	Bulrush/Tule	No	Yes	No	No	No	Private	Alan Schmierer
4/25/2008	San Luis Obispo	Shell Creek Road #2	400	Cattails	No	Yes	Yes	No	No	Private	Alan Schmierer
4/26/2008	Santa Barbara	Bell Road Pond	500	Cattails	No	Yes	No	Yes	No		Wes Fritz
4/25/2008	Santa Barbara	Cuyama Dairy	0	Mustard	Yes					Private	Wes Fritz
4/27/2008	Santa Barbara	Grisingher Pond	0	Willows	No						Wes Fritz

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/25/2008	Santa Clara	Del Puerto Canyon Road	50		No	Yes	Yes	No	No	Private	Bob Power
4/26/2008	Santa Cruz	Laguna de las Trancas	220	Bulrush/Tule	No	Yes	No	Yes	No	Big Creek Lumber Company	David Suddjian
4/27/2008	Santa Cruz	Scott Creek Marsh	0	Bulrush/Tule	Unknown					Public	Liz Cook
4/25/2008	Shasta	Clover Creek	0	Himalayan blackberry	No					Private	Scott Hill
4/25/2008	Shasta	Panorama Point	1000	Himalayan blackberry	Unknown	Yes	Yes	No	No	Private	Scott Hill
4/26/2008	Solano	Burke Lane	0	Bulrush/Tule	Unknown					Private	Robin Leong
4/26/2008	Solano	Creed Road	0	Bulrush/Tule	No					Private	Robin Leong
4/25/2008	Solano	Hay Road Landfill	0	Cattails	No					Solano County	Steve Lombardi
4/25/2008	Solano	Lynch Canyon North	0	Bulrush/Tule	No					Private	Robin Leong
4/26/2008	Solano	Rio Dixon Road	0	Bulrush/Tule	No					Private	Robin Leong
4/25/2008	Solano	Rush Ranch	200		No	Yes	No	Yes	No		Sarah Estrella
4/25/2008	Solano	Turner Parkway	0	Cattails	No					Private	Robin Leong
4/25/2008	Stanislaus	Ag Slough	7500	Bulrush/Tule	Yes	Yes	No	Yes	No	Private	Lyann Comrack
4/25/2008	Stanislaus	Christman Bottom	0	Mustard	No						Lyann Comrack
4/25/2008	Stanislaus	County Line Slough	0	Bulrush/Tule	No						Lyann Comrack
4/25/2008	Stanislaus	Crabtree	20		No	No	No	No	No		Chris Conard
4/25/2008	Stanislaus	Crabtree 2	0		No						Chris Conard
4/25/2008	Stanislaus	Diablo Grande Parkway	0		No						Lyann Comrack
4/25/2008	Stanislaus	Dunton Road/Hoods Creek	330		No						Dan Airola
4/25/2008	Stanislaus	Modesto Wastewater Treatment Plant	0		No						Lyann Comrack
4/25/2008	Stanislaus	Pete Miller	120	Mustard	No	Yes	No	Yes	No	Private	Lyann Comrack
4/25/2008	Stanislaus	Road J14	12500		No	Yes	Yes	No	No		Dan Airola
4/25/2008	Stanislaus	Simon Newman Ranch	1200	Milk thistle	No	Yes	No	Yes	No	Private	Rodd Kelsey
4/25/2008	Stanislaus	Sonora Road/Littlejohn's Creek	15		No	No	No	No	No		Dan Airola
4/26/2008	Sutter	Howsley Road	0	Himalayan blackberry	No						Kim Fettke
4/27/2008	Tulare	Alvin Souza's Dairy	0	Triticale	Yes					Alvin Souza	Elizabeth Palmer
4/26/2008	Tulare	Angiola's	0	Triticale	Yes	No	No	No	No		Tony Kurz
4/25/2008	Tulare	Avenue 368	0		Yes						John Lockhart
4/25/2008	Tulare	Boyd Road	100		Yes						John Lockhart
4/26/2008	Tulare	Cornerstone 1	3000	Triticale	Yes	Yes	Yes	Yes	Yes		Tony Kurz
4/26/2008	Tulare	Cornerstone 2	100	Triticale	Yes	No	Yes	No	No		Tony Kurz
4/26/2008	Tulare	Cornerstone 3	0	Triticale	Yes						John Lockhart
4/25/2008	Tulare	Cottonwood Creek	0		Yes						John Lockhart
4/26/2008	Tulare	Dead Pig Pond	800	Bulrush/Tule	Yes	Yes	Yes	Yes	No		Tony Kurz

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/24/2008	Tulare	Deer Creek Dairy	250	Triticale	Yes	No	No	Yes	Yes		Scott Frazer
4/26/2008	Tulare	East Toledo	0	Triticale	Yes						John Lockhart
4/25/2008	Tulare	Globe Drive Pond	100	Cattails	No	Yes	Yes	No	No		Tony Kurz
4/25/2008	Tulare	Lake Success	150	Nettles	Yes	Yes	Yes	No	No	DOD, ACE	Tony Kurz
4/26/2008	Tulare	North Toledo	0	Triticale	Yes						John Lockhart
4/26/2008	Tulare	Riverview Dairy	80000	Triticale	Yes	No	No	Yes	Yes	Private	Scott Frazer
4/27/2008	Tulare	TeVelde Dairy	0	Triticale	Yes						Elizabeth Palmer
4/26/2008	Tulare	Toledo Pit	300	Cattails	Yes	Yes	Yes	Yes	No		Tony Kurz
4/26/2008	Tulare	Vander Eyk Dairy	6000	Triticale	Yes	Yes	No	No	No	Private	Tony Kurz
4/25/2008	Tulare	Voice of America	0	Triticale	Yes						Jihadda Govan
4/25/2008	Tuolumne	Brooks Ranch	0		No						Chris Conard
4/25/2008	Tuolumne	Clay Pit	0	Cattails	No						Chris Conard
4/25/2008	Tuolumne	Old Wards Ferry Road	0	Himalayan blackberry	No						Chris Conard
4/25/2008	Tuolumne	Old Wards Ferry Road 2	85	Himalayan blackberry	Unknown	Yes	No	No	No	Private	Chris Conard
4/25/2008	Tuolumne	Yosemite Junction	550	Himalayan blackberry	No	No	No	Yes	No	Private	Chris Conard
4/27/2008	Yolo	Bill's Grasslands	50	Himalayan blackberry	No						Roger Adamson
4/26/2008	Yolo	Conaway Ranch	0	Milk thistle	No						Roger Adamson
4/26/2008	Yolo	Conaway Ranch Thistles	0	Milk thistle	No					Private	Roger Adamson
4/27/2008	Yolo	Road 88B	0	Nettles	No						Roger Adamson
4/22/2008	Yolo	Sunsweet Dryers	0	Cattails	No						Rodd Kelsey
4/30/2008	Yolo	Willow Slough	1500	Milk thistle	No	Yes	Yes	No	No	Private	Roger Adamson
4/26/2008	Yolo	Yolo Landfill West	350	Milk thistle	Yes	Yes	Yes	No	No	Private	Roger Adamson
4/25/2008	Yuba	Beale Main Gate	0		No						Chuck Carroll
4/26/2008	Yuba	Hallwood Boulevard	10000	Himalayan blackberry	Yes	Yes	Yes	No	No	Private	Ted Beedy
4/27/2008	Yuba	Haskell Ranch	0	Cattails	No					Haskell family; Private	Sami LaRocca
4/25/2008	Yuba	Lower Blackwelder Lake	0		No						Chuck Carroll
4/25/2008	Yuba	Miller Dam	0		No						Chuck Carroll
4/27/2008	Yuba	Plumas-Arboga	0	Cattails	No						Sami LaRocca
TOTAL			**392581**								

Appendix 4. 2008 Tricolored Blackbird Survey observations at non-colony sites and sites of unknown breeding status.

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/27/2008	Alameda	Sheridan Road	1		Unknown					Private	Richard Cimino
4/25/2008	Colusa	Colusa NWR Viewing Platform	50	Cattails	Unknown					Public	Ted Beedy
4/25/2008	Colusa	Lurline Road	100		No					Private	Ted Beedy
4/27/2008	Contra Costa	Byron Airport	0	Bulrush/Tule	Unknown					Private	Mike Perlmutter
4/27/2008	Contra Costa	Los Vaqueros Reservoir - Kellog Creek	0		Unknown					Public - Contra Costa Water District	Mike Perlmutter
4/27/2008	Contra Costa	Marsh Creek Reservoir	8	Cattails	Unknown	No	No	No	No	Public	Mike Perlmutter
4/26/2008	Kern	Highway 178	85								Bob Barnes
4/25/2008	Kern	Red Lake Cattle Pond	0	Cattails	No					USFWS Bittercreek NWR	Jesse Grantham
4/26/2008	Kern	Tehachapi #1 - El Camino	0		Unknown						Jean Moore
4/27/2008	Kern	Tehachapi #10 - West Ranch	0		Unknown						Jean Moore
4/27/2008	Kern	Tehachapi #11 - Lake Jean	0		Unknown						Jean Moore
4/25/2008	Kern	Tehachapi #13 - Meadowbrook Spring	0		Unknown						Jean Moore
4/25/2008	Kern	Tehachapi #14 - Sewer Ponds	0		Unknown						Jean Moore
4/26/2008	Kern	Tehachapi #2 - Cub Lake	0		No						Jean Moore
4/26/2008	Kern	Tehachapi #3 - Four Island Lake	0		No						Jean Moore
4/26/2008	Kern	Tehachapi #4 - Jacks Hole	0		Unknown						Jean Moore
4/27/2008	Kern	Tehachapi #5 - Equestrian Center	0		Unknown						Jean Moore
4/27/2008	Kern	Tehachapi #6 - CCI	0		Unknown						Jean Moore
4/27/2008	Kern	Tehachapi #7 - Horse Thief	0		Unknown						Jean Moore
4/25/2008	Kern	Tehachapi #8 - Brite Lake	0		Unknown						Jean Moore
4/27/2008	Kern	Tehachapi #9 - Norbitine	0		Unknown						Jean Moore
4/26/2008	Los Angeles	Tonner Canyon	0	Bulrush/Tule	No						Tamara Ball
4/26/2008	Merced	Rockshar Dairy	1	Willows	Yes					Private	John Fulton
4/26/2008	Merced	Van Clief Road	25	Wheat	Yes	No	No	No	No	Private	John Fulton
4/27/2008	Napa	Aviation Way Pond	0	Willows	Unknown					Private	Murray Berner
4/27/2008	Napa	Huichica Creek Pond	0	Cattails	Unknown					Public	Murray Berner
4/27/2008	Napa	Mouth of American Canyon Creek	0	Willows	No					Public	Murray Berner

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/27/2008	Napa	Napa Sanitation District Mitigation Pond	0	Bulrush/Tule	No					Private	Murray Berner
4/27/2008	Placer	Dalby Road	600		No	Yes	No	No	No	Private	Sami LaRocca
4/27/2008	Placer	Wise Road Lincoln Airport	150		No					Private	Sami LaRocca
4/27/2008	Riverside	Garner Valley	0	Cattails	No					San Bernardino National Forest	Steve Myers
4/26/2008	Sacramento	Arno Rd	500		Yes	Yes	No			Private	Stephanie Jentsch
4/28/2008	Sacramento	Bradshaw Christian	0	Himalayan blackberry	No					not known	Liz Cook
4/27/2008	Sacramento	Bufferlands	75		No					Sacramento Regional County Sanitation District	Chris Conard
4/25/2008	San Diego	Campo	0		Unknown					Public	Thomas Blackman
4/25/2008	San Diego	Hwy 79 Call Box 79-231 Santa Ynez Valley	0	Himalayan blackberry	No					presumed Private	Gjon Hazard
4/25/2008	San Diego	La Posta	0	Bulrush/Tule	Yes					Private	Thomas Blackman
4/25/2008	San Diego	Mesa Grande Rd X Black Canyon Rd (non colony)	4		Unknown					Private	Gjon Hazard
4/25/2008	San Diego	Mesa Grande Rd X Ponchetti Rd (non colony)	8		Unknown					Private	Gjon Hazard
4/25/2008	San Diego	Portero	0	Bulrush/Tule	Unknown					Private	Thomas Blackman
4/27/2008	San Diego	Rangeland Road	0	Mallow	Unknown					Private	Thomas Blackman
4/25/2008	San Luis Obispo	Cal Poly SLO	0	Bulrush/Tule	No					Public	Greg Smith
4/25/2008	San Luis Obispo	Chorro Reservoir	0	Bulrush/Tule	Unknown					California Dept. of Military	Greg Smith
4/25/2008	San Luis Obispo	Cloisters Pond Morro Bay	0	Bulrush/Tule	Unknown					City of Morro Bay	Greg Smith
4/24/2008	San Luis Obispo	Hi Mountain Road Ranchita Estates #1	0		No					Private	Greg Smith
4/24/2008	San Luis Obispo	Hi Mountain Road Ranchita Estates #2	0	Bulrush/Tule	No					Private	Greg Smith
4/25/2008	San Luis Obispo	Turri Road, Morro Bay	0		No					Private	Greg Smith
4/26/2008	Santa Barbara	Bonilla Ranch	0	Cattails	Yes						Wes Fritz
4/25/2008	Santa Barbara	Caliente Ranch #1	0	Cattails	Yes						Wes Fritz
4/25/2008	Santa Barbara	Caliente Ranch #2	0	Cattails	Yes						Wes Fritz
4/25/2008	Santa Barbara	Cuyama Elementary School	0	Cattails	Unknown						Wes Fritz
4/25/2008	Santa Barbara	Cuyama River	0	Coyote bush	No						Wes Fritz

Date	County	Colony Name	Number	Substrate	Grains Present	Song	Nest Material	Carrying Food	Fledglings	Owner	Observer
4/27/2008	Santa Barbara	Guadalupe Sewage Plant Pond	0	Willows	Yes						Wes Fritz
4/27/2008	Santa Barbara	Guadalupe Slough	0	Cattails	No						Wes Fritz
4/27/2008	Santa Barbara	Lompoc #1	0	Himalayan blackberry	No						Wes Fritz
4/27/2008	Santa Barbara	Lompoc #2	0	Cattails	No						Wes Fritz
4/25/2008	Santa Barbara	No Name Pond	0	Cattails	No						Wes Fritz
4/25/2008	Santa Barbara	Possible Pond	0	Cattails	No						Wes Fritz
4/27/2008	Santa Barbara	Punch Bowl	0	Bulrush/Tule	No						Wes Fritz
4/25/2008	Santa Barbara	S Turn Pond	0	Cattails	No					Private	Wes Fritz
4/27/2008	Santa Barbara	Santa Maria Golf Course	0	Bulrush/Tule	Unknown						Wes Fritz
4/27/2008	Santa Barbara	Santa Maria, Black & Betteravia	0	Bulrush/Tule	No						Wes Fritz
4/26/2008	Santa Barbara	Star Route Pond	0	Cattails	No						Wes Fritz
4/27/2008	Santa Barbara	USP Lompoc, Dairy Pond	0	Cattails	Yes						Wes Fritz
4/27/2008	Santa Barbara	Vandenberg - Santa Ynez River	0	Coyote bush	No						Wes Fritz
4/27/2008	Santa Barbara	Vandenberg pond	0	Bulrush/Tule	No						Wes Fritz
4/24/2008	Shasta	Clover Creek Preserve	30								Paula Crumpton
4/25/2008	Stanislaus	Pete Miller and Sullivan	125	Milk thistle	No	No	No	No	No	Private	Lyann Comrack
4/25/2008	Stanislaus	Shiloh Road	100		Yes	No	No	No	No	Private	Lyann Comrack
4/25/2008	Tulare	Deer Creek Recharge Basin	0	Bulrush/Tule	Unknown					Public	John Lockhart
4/26/2008	Tulare	Jorge Dairy	0	Triticale	Yes					Private	Rose Cook
4/26/2008	Tulare	Pacheco Dairy	0		Unknown					Private	Rose Cook
4/26/2008	Tulare	Sierra Dairy	0		Unknown					Private	Rose Cook
4/25/2008	Tuolumne	Wamble and Fogarty	10		Unknown					Private	Chris Conard
4/27/2008	Yuba	Dairy Road	100		Unknown					Private	Sami LaRocca
4/27/2008	Yuba	Flying Rodeo	300		Unknown	Yes	No			Private	Sami LaRocca
4/27/2008	Yuba	Hoffman Road	5		Unknown					Private	Sami LaRocca
TOTAL			2277								

Results of the 2011 Tricolored Blackbird Statewide Survey

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INTRODUCTION

The Tricolored Blackbird (*Agelaius tricolor*) is a near endemic to California with at least 95% of the world's population restricted to the state and only small breeding colonies in Nevada, Oregon, Washington, and Baja California, Mexico. A highly colonial species, Tricolored Blackbirds form some of the largest colonies of any songbird in North America (Orians 1961, Beedy and Hamilton 1997). Their narrow geographic range and formation of immense breeding colonies has made them highly vulnerable to disturbance and habitat loss resulting in an 80% decline in the past 90 years (DeHaven et al. 1975, Beedy et al 1991, Beedy and Hamilton 1997, 1999, Kelsey 2008). Neff (1937) was the first to conduct comprehensive surveys for Tricolored Blackbirds in California and found several million birds throughout the state. Recent surveys have shown that the population in California is hovering between 250,000 and 400,000 (Kelsey 2008). This abrupt and significant decline makes the Tricolored Blackbird a top bird conservation priority in California.

One of the main causes for their dramatic decline has been the near elimination of native cattail (*Typha latifolia*) wetland complexes throughout the Central Valley following agricultural expansion and conversion of wetlands into arable land. Adapting to the loss of their native habitat in the Central Valley, Tricolored Blackbirds began to exploit the rich cropland that was created. In the early 20th century, Neff (1937) recounts large colonies using the Sacramento Valley rice fields for foraging with colonies nesting in the sloughs and waterways of these farms. A colony with an estimated 260,000 nests was found in a 60-acre marsh in Glenn County in 1934 (Neff 1937). More recently, Tricolored Blackbirds have begun to concentrate their breeding colonies in agricultural fields of the San Joaquin Valley. In particular, they are exploiting the perfect combination of resources available on and around dairies in California. Triticale in particular, a hybrid of wheat and rye grown as silage on dairies for its high nutritional value, provides robust structure to construct their nests and these are commonly associated with abundant food and water in nearby pasture and feed lots. As a result, the expanding dairy industry in the San Joaquin Valley has resulted in a population shift and a consolidation of the species into "mega-colonies" of tens of thousands of birds, all concentrated around dairy farms. Fifty percent of the breeding Tricolored Blackbirds in California in 2008 were observed nesting in silage fields during the 2008 statewide survey (Kelsey 2008) and this has been a recurring pattern for the last decade.

The result of this increasing concentration of breeding birds in agricultural fields has been a need to focus on protecting these agricultural colonies. The peril of using Triticale as nesting habitat is apparent when farmers need to cut the silage crop in mid- to late April, typically in the middle of the Tricolored Blackbird breeding effort. With so many of the breeding Tricolored Blackbirds using agricultural fields, most of the reproduction for this species in any given year is dependent on the success of these colonies. Over the last 15 years public agencies and Audubon California have used public funds for numerous silage buyouts, paying landowners to delay harvest so that the Tricolored Blackbirds are able to finish nesting. So far this has resulted in protection of 600,000 nests and approximately 410,000 Tricolored Blackbird fledglings (Meese 2009a, unpublished data). However, this represents only a temporary solution. Long-term conservation

of the Tricolored Blackbird will depend on reestablishing enough suitable natural habitat in these working landscapes that this species does not rely so heavily on agricultural habitats where disturbance minimizes breeding success. The Tricolored Blackbird Working Group has set a long-term population target of increasing the population to 750,000 birds; meeting this goal will depend on substantial efforts to create new and enhance existing breeding colony sites on public and private lands across California.

This report is a summary of the recent Tricolored Blackbird triennial statewide survey. Data are collected on colony size, location, substrate, and behavior to estimate total population size and increase our understanding of habitat use and distribution of this imperiled species. Results of this survey, combined with data from previous surveys and ongoing research efforts at the University of California (UC), Davis, will help guide conservation efforts of the Tricolored Blackbird Working Group. The following summarizes results of the 2011 statewide survey and provides recommendations for conservation efforts in the coming years.

METHODS

For the 2011 survey we used the same protocols used during the 2008 survey in order to standardize the effort and ensure that results are as comparable as possible. The following are the methods and protocols used.

Volunteer Coordination

The 2011 statewide survey was funded by the US Fish and Wildlife Service (USFWS) and coordinated by Keiller Kyle of Audubon California, with assistance from Danielle Heckman of San Diego Audubon. Audubon California was responsible for overall survey coordination, survey protocols and materials, and maps, as well as coordinating volunteers for areas north of Kern County. San Diego Audubon recruited and coordinated survey volunteers for southern California. Due to the logistical limitations of distance and geography, having a southern California coordinator helped recruit more volunteers, cover more area, and find more Tricolored Blackbirds.

The 2011 survey was completely volunteer-based. Starting in December 2010, volunteers from previous surveys were contacted from the Audubon California list. Advertisements were sent to several major California birding listservs, including Central Valley Birding and California Birding. Audubon chapters were also contacted; several chapters published the survey dates and sign up information in their quarterly newsletters. In addition, eBird California and Audubon California both advertised the survey on their home pages. After expressing interest in the survey, volunteers were instructed to sign up for pre-determined survey areas using the UC Davis-based Tricolored Blackbird Portal. This is the first survey to have sign up information, maps, and survey protocol readily available online.

Survey Timing

The survey was conducted April 15-17 to ensure that the majority of Tricolored Blackbirds had already established nests but prior to most colonies fledging or being disturbed by farmers harvesting their fields. These dates are earlier than previous surveys to better avoid the harvest time of silage crops, which complicated the 2008 count due to a few large colonies being cut

(Kelsey 2008). A three day window for the survey is used to capture as many birds as possible on colonies during their first breeding attempt of the year. Tricolored Blackbirds and colonies can shift locations over relatively short periods of time during the breeding season. Making sure that a comprehensive count is made in a narrow time window helped ensure we were not counting the same birds more than once. We selected dates that included the weekend so that volunteers had the flexibility to survey on their own time and not interfere with work responsibilities. Volunteers were encouraged to survey throughout the day since there is little evidence that Tricolored Blackbird colonies become less active later in the day. Surveying throughout the day also allowed volunteers to cover more ground and survey more potential colony sites than if they were restricted to surveying in the morning.

Survey Areas

All confirmed colony locations from the Tricolored Blackbird Portal were mapped using ArcMap 9.2 (ESRI). For each known colony (or set of colonies in close proximity), we created a survey area map that showed primary and secondary roads, county boundaries, and colony locations. A total of 105 survey areas with corresponding maps by County were created, with each area covering approximately 225 square miles (15 miles by 15 miles). These maps were converted to pdf format and uploaded onto the Tricolored Blackbird Portal for download and use by volunteers during the survey.

There was significant variation in the total area surveyed by each volunteer based on the number of known historic colony sites and the distance between sites for each mapped area. Volunteers were not expected to cover the entire area, focusing instead on the following priorities: 1) known historic colony sites indicated on maps, 2) suitable habitats in vicinity of historically used sites, and 3) other suitable habitats across the mapped survey area. Most volunteers signed up for one survey area although several groups of volunteers covered multiple survey areas over the three day effort. This year, unlike in 2008, no county leaders were established and most of the organization of the survey took place online.

Survey Protocol

We provided a survey protocol (Appendix 1) for each volunteer that outlined survey priorities, guidelines for viewing colonies and duration of site visits, estimating the size of colonies, behavioral observations, and recording colony characteristics (e.g. substrate).

Training

Three training sessions were held for volunteers at three different locations: Kern National Wildlife Refuge, UC Merced, and the Yolo Bypass Wildlife Area in Yolo County. Training sessions included an indoor session and site visits to local colonies. The objectives of these training sessions were to help volunteers distinguish Tricolored Blackbirds from Red-winged Blackbirds, introduce the survey protocol and online database, and to visit local colonies to practice identification and colony size estimation.

Colony Size Estimation

Estimating the number of birds in a Tricolored Blackbird colony that is relatively large is a challenging task and accurate counts of large colonies are nearly impossible. For small colonies (fewer than 100 birds) volunteers were asked to count all individuals (precise count). For larger

colonies, scanning counts were used to estimate the number of birds present (see Protocol-Appendix 1). Three estimates of colony size were reported: minimum number, maximum number, and best estimate. While these are still based on visual estimates, they provide a range that reflects the likely precision of the estimates. Many of the major colonies in the San Joaquin Valley were visited at least once by Bob Meese during his intensive surveys of settlement and breeding by Tricolored Blackbirds. Colony size estimates for these colonies were adjusted based on Meese's own observations at those colonies. In addition to visual estimates of the number of birds, volunteers were asked to report the approximate area of occupied substrate for each colony. These data have been entered along with the visual estimates and can be used in future analyses as a secondary estimate of colony size combined with known average nest densities for colonies. However, using a similar comparison, Hamilton (1998) reported that visual estimates of colony size only varied from estimates based on nest density by an average of 15%.

Colony Observations

For each colony, volunteers were asked to record colony attributes, including: primary and secondary substrate, dimensions of the physical area occupied, presence and distance to open water, and the presence of stored grains. Also, volunteers were asked to record behavioral observations for Tricolored Blackbirds at the colony sites. These included whether the birds were singing or carrying food and if the colony was quiet (indicating a period of incubation). These behavioral observations are important for understanding the status of colonies and also help evaluate the precision of the colony size estimate, since the activity of birds at the colony influences their detection and the numbers estimated.

RESULTS

Abundance

A total of 100 volunteers participated in the survey, visiting 608 historical and new Tricolored Blackbird colony sites in 38 counties (Table 1, Figure 1). Volunteers logged an average 200 miles of driving for the survey. The statewide population estimate was 259,322 birds at 138 sites in 29 counties (Table 2, Figure 2).

The majority of Tricolored Blackbirds (89%) were counted in the San Joaquin Valley and Tulare Basin (Tables 3 and 4), matching the results in prior surveys. The three largest concentrations of birds occurred in Merced (54%), Kern (24%), and Tulare (9%) counties (Figure 3). The top ten largest colonies for 2011 were found in these three counties (Table 5) and 16 of the top 22 were from the San Joaquin Valley or Tulare Basin. Notably, 65% of the population was consolidated into only six colony sites in Merced, Kern, and Tulare counties.

The southern California subpopulation was estimated to be 5,965 individuals at 32 sites in three counties, with a total of 74 sites visited (Table 2). This represents an almost 10% increase in number at eight more colony sites compared to 2008 survey results.

Substrates

Agricultural fields, especially triticale and other silage crops, have held some of the largest colonies during past surveys and they continued to do so in 2011. Agricultural fields represented

a relatively small number of colonies (11.2% of all colonies), but held large portions of the population (44.6%; Table 6, Figure 4). Silage crops in particular represented four of the top ten largest colonies with 42.2% of the Tricolored Blackbird population (Table 5). The largest recorded colony for the year was a silage field of Fava Bean and Barley that supported 17.4% of the total bird population estimate before an important section of this colony was lost to harvest. Milk thistle (*Silybum marianum*) and bull thistle (*Circium vulgare*) were also important breeding substrates with relatively few sites (12% of total) supporting 33.9% of the population. In contrast, natural and semi-natural habitats had the opposite pattern with many sites supporting a smaller part of the population. The largest proportion of colony sites (33.6%) occurred in wetlands dominated by cattails or bulrush (*Schoeneoplectus californicus*), but these colonies were small and represented only 4.9% of the total population. Similarly, Himalayan blackberry (*Rubus armeniacus*) colonies were prevalent (23.1% of the colonies found), but represented only 6.9% of the population (Table 6, Figure 4). The remainder of the Tricolored Blackbird colonies observed were in a diversity of substrates with relatively small colonies, including tamarisk, willows, stinging nettle, and mallow (Table 6; Figure 4).

DISCUSSION

The effort put forth by the 2011 volunteers was unprecedented; 72% more sites were visited by fewer volunteers compared to the 2008 survey (Kelsey 2008). Despite the greater effort and efficiency, fewer birds were observed this year. Given the difficulties of getting precise estimates of colony size, especially for the very large colonies that represent most of the population, the total population in California is difficult to estimate precisely. Also, in any survey there are undoubtedly birds that are missed. This year a few counties that are known to have historically supported breeding colonies were either not covered (e.g. Santa Barbara County) or were not surveyed thoroughly (e.g. San Luis Obispo County). However, these areas have historically accounted for a maximum of 6,500 birds. This is not a trivial number by Tricolored Blackbird standards, but this year's estimate of approximately 259,000 birds can safely be compared to previous surveys, all of which used very similar protocols and had similar or less coverage.

This year's population estimate represents a substantial decrease from 2008 of approximately 135,000 birds, or a 34% decline (far more than would have been missed by any gaps in coverage). This number is more similar to the population estimate in 2005. One important probable cause of this decline is low reproductive success that has been documented in reports over the past three years (Meese 2008, 2009, 2010). Several of the largest colonies in recent years have had an average nest success rate of 0.25 young fledged per nest and the reproductive success of these colonies has been declining for several years (Figure 5). This may be a major factor in the observed population decline despite continued conservation efforts (Meese 2009).

Another potential cause of the population decrease is low survival rates of adults and juveniles. These factors are less well studied and quantified. There are few data from which to calculate annual survival rate. Using the best existing estimates for reproductive success (0.25 fledglings per nest; Meese 2008, 2009, 2010), number of nests per individual (0.67, based on 1.5 adults per nest; Beedy et al. 1991) and the 2008 estimated population size (395,000), it is possible to generate a crude estimate the annual survival rate based on a linear population growth formula:

$$N_t = N_0(rt)$$

(Where t = years, N_t = population size in year t, N_0 = starting population size, and r = population growth rate or births/individual – deaths/individual)

Given there were an estimated 395,000 Tricolored Blackbird individuals in 2008 and only an estimated 259,000 in 2011, this would suggest an annual survival rate of 70%. Compared to estimates for other temperate blackbirds that average annual survival between 40% and 50%, this is high (Fankauser 1971, Searcy and Yasukawa 1981). However, this estimate does not account for the fact that Tricolored Blackbirds are well known to re-nest multiple times each year, either at the same location or different sites. Assuming an average of two successful nests per year with the same number of fledglings per nest, our annual survival rate estimate to reach the current population size is 53%, much closer to more rigorous estimates for related species. In general, even though these are coarse calculations, this points to the possibility that low annual reproductive output in this species is overcompensating for a survival rate that is at least comparable to related species and the fact that Tricolored Blackbirds are capable of breeding many times per year. In order to reach the Tricolored Blackbird Working Group's goal of a steady population size of 750,000, it will be imperative to have at least the major Tricolored Blackbird colonies successfully producing more fledglings each year. This will require not only colony protection and creation of stable breeding sites, but also ensuring access to high quality foraging areas, including the protection and maintenance of productive annual grasslands, irrigated pastures, and bird-friendly alfalfa fields near colony sites.

The survey data from 2011and estimates from previous surveys, show that the proportion of breeding birds during spring continues to increase in the San Joaquin Valley, whereas they are tending to stay low or decrease in other regions (Figure 6). Also, the San Joaquin Valley exhibits the widest fluctuations in number (Figure 7) and this is where reproductive success is known to be low. All of these factors suggest that significant attention should continue to be paid to improving habitat availability and reproductive success in the San Joaquin Valley, especially in Merced, Kern, and Tulare Counties. These three counties alone hold 88% of the global Tricolored Blackbird population in early spring and should be the focus of conservation and research efforts.

Consolidation of Tricolored Blackbirds on Farms

The trend over the past 17 years has been the consolidation of the Tricolored Blackbird population into fewer large colonies. This year 79% of the population was concentrated in colonies with over 5,000 birds. This is similar to 2005 and 2008 survey results, despite the decline in the number of large colonies this year. One possible explanation for this increasing concentration of birds in fewer sites is a lack of usable habitat within the agricultural matrix of the Central Valley. However, the number of active colony sites was the same in 2011 as in 2008 (138 and 135 active colony sites, respectively), despite a 34% population decline. Given the same number of colony sites are being used, it seems more birds are choosing to nest in "mega-colonies" even though many of these colonies are the silage colonies most at risk of disturbance. The advantages of being on or near a dairy farm with plentiful insects, water, and grain are complemented by the consistent and uniform stalks of the triticale plants used for nests.

Consolidation of Tricolored Blackbird colonies in farm fields, particularly silage and other fields associated with dairies, will continue to be a central conservation challenge for this species. Some of these colonies breed successfully and produce large numbers of offspring. However, many of the largest farm colonies continue to completely fail each year either due to harvest or nest predation. Given the increasing concentration of the world's population in fewer, larger farm field colonies, it will be necessary in the short term to protect these colonies to avoid population collapse. The long-term solution, on the other hand, will be to create and protect alternative, stable, and well managed breeding habitats. Success will likely depend on creating alternative habitats in these same areas since birds will continue to be attracted to historic sites due to some degree of site fidelity, and due to the food and water resources that are available on these farms. In the long-term, as the secure colony sites are secured and the population stabilizes, it may become as or more important to work towards creating many smaller colonies so that the impact of any individual colony failure is minimized.

RECOMMENDATIONS

1. **Continue to promote Public land use by Tricolors –** Merced National Wildlife Refuge (MNWR) was a positive model this year for growing the right type of substrate to attract Tricolored Blackbirds. Combined, MNWR had 60,000 birds in two colonies simultaneously; more than any other site in the state. More public lands that are located in areas with quality foraging opportunities should follow the MNWR model and expand the amount of secure habitat available to Tricolored Blackbirds. Several colonies were found on public lands, including at Brushy Peak County Park in Alameda County, Rancho Jamul Wildlife Area in San Diego County, Delevan National Wildlife Refuge in Colusa County, and Bitter Creek National Wildlife Refuge in Kern County. Many public sites are not currently managing for spring flooded wetlands or upland habitat that could be colonized by Tricolored Blackbirds. The California Department of Fish and Game (DFG) and USFWS both have many refuges and reserves that, with modest changes in management, could serve as valuable breeding and foraging habitat. The Tricolored Blackbird Working Group should prioritize working with public land managers to find effective ways for creating and managing habitat for this species on existing reserves.

2. **Annual surveys of Merced, Kern, and Tulare Counties –** Given that these three counties represent 88% of the breeding population in 2011, which has been the case for the past decade, surveys should be done annually to assess the yearly responses of Tricolored Blackbirds to weather patterns and habitat creation or protection efforts. Focusing on these three counties would be an effective way to track the majority of the population. A smaller number of volunteers and professionals could cover the area easily in a few days and the cost would be far less than the triennial survey.

3. **Continue the Triennial survey indefinitely –** In addition to annual surveys of the population strongholds, the triennial survey should be continued to monitor other parts of the state that still house a large portion of the population.

4. **Colony protection and management in the Sacramento Valley**. Much of the survey and conservation work in recent years has focused on early season breeding colonies in

the San Joaquin Valley, and this will continue to be necessary given the importance of this region for most of the Tricolored Blackbird population. However, many of the Sacramento Valley colony sites are used by the same birds later in the spring and could be as important for producing offspring. An emphasis needs to be placed on the Sacramento Valley colony sites as there is a need for them to be protected and monitored to the same extent as those in the San Joaquin Valley. Historically, the Sacramento Valley, all the way to Modoc County, had colony sites that held hundreds of thousands of Tricolored Blackbirds (Neff 1937, DeHaven 1975). It is not inconceivable that the remaining habitat in the Sacramento Valley could sustain those numbers again if targeted and well supported conservation efforts are implemented.

5. **Updating the Tricolored Blackbird Portal** – We recommend, as the 2008 report did, that increased use of the Tricolor Portal should be promoted and facilitated by improvements to the website. The Tricolored Blackbird Working Group and the Portal need to take advantage of the emerging social media networks and the growing tendency of birders to share information online. The Portal has not become the clearinghouse for Tricolored Blackbird information that it could due to underexposure and the difficulty of maneuvering around the site. We recommend that the Portal be updated and better connected with the birding communities, so that observations throughout the year more regularly get uploaded and made available for tracking distribution of this species. We also recommend that the data from the Tricolor Portal be made uploaded to the Avian Knowledge Network database, either directly or through eBird.

6. **Increasing habitat options on private lands** – Based on the results of the 2011 survey it is quite clear that private lands are the linchpin for Tricolored Blackbird conservation. Due to the relative paucity of public land sites in the Central Valley, it continues to be crucial to engage with private landowners to educate them about Tricolored Blackbirds, especially when the birds are nesting on their properties, and give them options for preserving colonies and colony sites. We need to make a concerted effort to increase the amount of secure habitat available on private lands. Currently most Tricolored Blackbirds use dairy farm fields and weed patches to nest, both of which are subject to being harvested or mowed during the breeding season. The main focus of Tricolored Blackbird private lands work should be creating and securing habitat adjacent to these fields using monetary incentives through private as well as state and federal government conservation programs. Specifically, the USFWS should focus Partners for Fish and Wildlife funds on Tricolored Blackbird-specific projects among agricultural landowners, as well as private duck and hunting clubs to change land management practices to incorporate Tricolored Blackbird breeding and foraging habitat into the maintenance schedule of managed wetlands. Several refuges in the San Joaquin Valley have begun to manage for Tricolored Blackbirds, with positive results for both colony size and reproductive success. The Natural Resources Conservation Service is well connected to the agricultural community in California and has established a Tricolored Blackbird-specific fund that, starting in 2012, will be used for colony protection and habitat creation and enhancement. We recommend that this fund be maintained over the next 5-10 years to support recovery of this species. Good examples of what is possible are several managed wetlands that have altered their management with financial help to maintain cattail marshes throughout the

spring. This has resulted in several thousand Tricolored Blackbirds nesting at these sites for three consecutive attempts (Kelly Weintraub, pers. comm.). The birds choose natural habitat consistently when it is made available, and we should be encouraging creation and management of these natural habitats in areas where they can attract Tricolored Blackbirds away from the 'mega colonies' in agricultural fields.

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TABLES

Table 1. Number of counties surveyed and occupied sites Visited, and active colonies in different regions of California.

Region	No. of Counties	Occupied Counties	Sites Visited	Active Sites
Northern California	6	3	30	7
Sacramento Valley	11	9	269	38
Central Coast	6	5	34	7
San Joaquin Valley	7	6	118	25
Tulare Basin	3	3	82	29
Southern California	5	3	75	32
Total	**38**	**29**	**608**	**138**

Table 2. Number of birds seen by region and by county during statewide surveys 1994-2011

Region//County	1994	1997	1999	2000	2001	2005	2008	2011
Northern California								
Humboldt	100	32	0	0	0	0		
Lake	0	60	0	0	0	0	711	421
Lassen	0	6	0	300		0		
Mendecino	0	12	15	0	0	0	835	315
Modoc	250	250	0	0		0		180
Napa	11	400	600	104		300	0	0
Shasta	2,585	0	0	0		20	1,030	
Siskiyou	947	250	0	0		0		
Sonoma	30	0	0	0		0	0	0
Marin	400	0	0	0		0	0	0
Sacramento Valley								
Amador							6,600	350
Butte	0	0	5,958	5,224	500	0	2,541	0
Calaveras	0	8,313	0	720		30	385	120
Colusa	27	4,175	1,031	2,500	13,000	0	301	923
El Dorado	0	200	0	0		250	0	0
Glenn	2,000	0	0	0		0		500
Placer	1,000	658	4,500	6,200	2,800	1,600	12,050	3,310
Sacramento	94,028	31,338	2,000	14,503		16,400	3,551	6,105
Solano	5	75	33	0	0	2,000	200	2,275
Sutter	235	0	400	200		0	0	1
Tehama	0	35	5,000	0				
Yolo	475	200	0	50	400	3,070	1,900	5,080
Yuba	597	950	0	0		250	10,405	500
Central Coast								
Alameda	24	1,200	4,000	0		200	28	2,200
Contra Costa	400	0	0	0		0	358	0
Monterey	2,220	5,900	1,756	983	3,545	30	50	10
San Benito	0	778	0	1,282			66	
San Luis Obispo	0	660	261	1,000		4,210	6,242	197
Santa Clara	3,500	550	0	0		100	50	0
Santa Cruz	0	0	0	200		0	220	0
San Joaquin Valley								
Fresno	21,150	2,550	39,390	5,061	10,000	1,550	1,000	400
Madera	0					2,960	117	505
Merced	79,100	13,000	3,071	27,100	71,500	17,900	154,674	139,170
San Joaquin	15,978	11,857	0	7,073		0	0	0
Stanislaus	3,928	150	4,126	15	0	12,180	21,910	1,900

Region//County	1994	1997	1999	2000	2001	2005	2008	2011
Tuolumne	0	0	0	175	1,100	250	635	170
Tulare Basin								
Kern	72,255	17,000	1,600	7,875	11,100	155,407	69,702	61,825
Kings	10,000	33,300	0	10,000	950	0	2,500	2,950
Tulare	50,000	55,500	14,000	19,800	59,000	18,500	90,800	23,950
Southern California								
Los Angeles	815	430	1,053	610		5,100	1,270	1,066
Orange	1,034	231	300	195		0		
Riverside	2,175	38,356	4,000	10,000	80	12,200	2,150	4,132
San Bernardino	0	300	1,000	0		0	700	0
San Diego	2,000	3,236	175	1,990	150	395	1,367	767
Santa Barbara	2,000	0	0	0	80	2,900	500	
Ventura	90	0	0	0		0		
Total	**369,359**	**231,952**	**94,269**	**123,160**	**174,205**	**257,802**	**394,848**	**259,322**

Table 3. Total numbers of birds seen in each region during statewide surveys 1994-2011

Region	1994	1997	1999	2000	2001	2005	2008	2011
Northern California	4,323	1,010	615	404	0	320	2,576	916
Sacramento Valley	98,367	45,944	18,922	29,397	16,700	23,600	37,933	19,164
Central Coast	6,144	9,088	6,017	3,465	3,545	4,540	7,014	2,407
San Joaquin Valley	120,156	27,557	46,587	39,424	82,600	34,840	178,336	142,145
Tulare Basin	132,255	105,800	15,600	37,675	71,050	173,907	163,002	88,725
Southern California	8,114	42,553	6,528	12,795	310	20,595	5,987	5,965
Total	**369,359**	**231,952**	**94,269**	**123,160**	**174,205**	**257,802**	**394,848**	**259,322**

Table 4. Percent of population nesting in each region during statewide survey 1994-2011

Region	1994	1997	1999	2000	2001	2005	2008	2011
Northern California	1.2%	0.4%	0.7%	0.3%	0.0%	0.1%	0.7%	0.4%
Sacramento Valley	26.6%	19.8%	20.1%	23.9%	9.6%	9.2%	9.6%	7.4%
Central Coast	1.7%	3.9%	6.4%	2.8%	2.0%	1.8%	1.8%	0.9%
San Joaquin Valley	32.5%	11.9%	49.4%	32.0%	47.4%	13.5%	45.2%	54.8%
Tulare Basin	35.8%	45.6%	16.5%	30.6%	40.8%	67.5%	41.3%	34.2%
Southern California	2.2%	18.3%	6.9%	10.4%	0.2%	8.0%	1.5%	2.3%

Table 5. Top 22 largest Tricolored Blackbird colonies observed in 2011. Included is the county, percentage of the total population, substrate the birds nested in, and whether grains were present at the site.

County	Colony Name	Number	% of Total	Substrate	Grains Present
Merced	Sandy Mush and 99	45,000	17.4%	Fava Bean/barley	Yes
Merced	Merced NWR: West Farmfield	40,000	15.4%	Milk Thistle	Yes
Kern	Costa's Dairy	24,000	9.3%	Triticale	Yes
Tulare	Deer Creek Dairy	22,500	8.7%	Triticale	Yes
Merced	Merced NWR: Duck Slough	20,000	7.7%	Bull Thistle	Yes
Kern	West Poso	18,000	6.9%	Triticale	Yes
Merced	Owens Creek	15,000	5.8%	Milk Thistle	Yes
Merced	South of Childs	10,000	3.9%	Milk Thistle	Yes
Kern	Basin 6	9,600	3.7%	Tamarisk	No
Merced	Edminster Rd and 2nd Av	4,700	1.8%	Himalayan Blackberry	No
Riverside	Warren Road	3,000	1.2%	Mallow	Yes
Kings	Mid-Hacienda Ranch	3,000	1.2%	Tamarisk	No
Yolo	County Road 92B	2,700	1.0%	California Blackberry	Yes
Placer	Twelve Bridges and Hwy. 65 West	2,500	1.0%	Himalayan Blackberry	No
Sacramento	Elder Creek at Bradshaw Road	2,500	1.0%	Himalayan Blackberry	No
Kern	Wind Wolves: Santiago Springs	2,500	1.0%	Stinging Nettle	No
Kern	Tule Road #2	2,000	0.8%	Cattails	No
Sacramento	White Rock Road at Prairie City SVRA Entrance	2,000	0.8%	Himalayan Blackberry	No
Kern	Wind Wolves: Little Lobo	2,000	0.8%	Willows	No
Merced	Keaton and 4th	1,500	0.6%	Himalayan Blackberry	Yes
Tulare	Dead Pig Pond	1,500	0.6%	Cattails	Yes
Yolo	East of Madison	1,500	0.6%	Himalayan Blackberry	No

Table 6. Proportion of colonies in each substrate observed within each survey region and for California overall. Also shown at bottom is the percent of total birds observed for each substrate across California.

Region	Bull Thistle	Cattail/ Bulrush	Fava Bean/ Barley	Himalyan Blackberry	Milk Thistle	Mallow	Stinging Nettle	Tamarisk	Triticale	Willow	N
Northern California	0.0%	72.2%	0.0%	27.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	7
Sacramento Valley	9.2%	13.7%	0.0%	70.2%	0.5%	4.6%	0.0%	0.0%	0.0%	0.0%	38
Central Coast	0.0%	59.1%	0.0%	0.0%	7.7%	0.0%	0.0%	0.0%	17.8%	0.0%	8
San Joaquin Valley	13.4%	0.9%	31.8%	3.0%	46.7%	0.0%	3.8%	0.0%	0.4%	0.0%	25
Tulare Basin	0.1%	5.9%	0.0%	0.0%	0.1%	0.0%	4.7%	13.8%	72.7%	2.4%	29
Southern California	2.5%	24.4%	0.0%	0.5%	0.0%	51.3%	17.5%	0.0%	0.1%	1.9%	31
All Sites	**3.7%**	**33.6%**	**0.7%**	**23.1%**	**8.2%**	**4.5%**	**12.7%**	**1.5%**	**6.0%**	**6.0%**	**138**
% Birds for all sites	**8.1%**	**4.9%**	**17.4%**	**6.9%**	**25.8%**	**1.7%**	**4.1%**	**4.7%**	**25.5%**	**0.9%**	

FIGURES

Figure 1. Colony sites visited in 2011

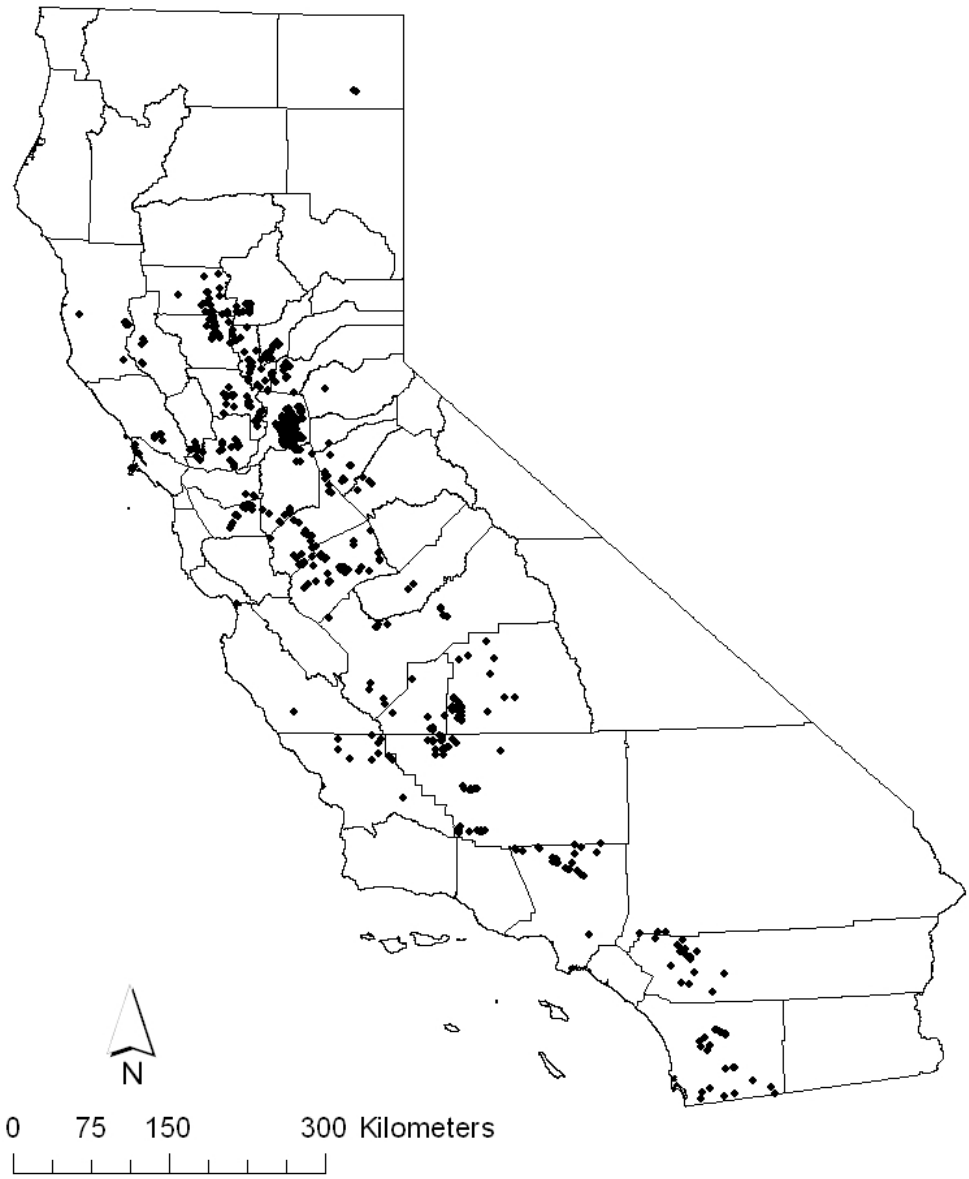


Figure 2. Population estimates from statewide census efforts 1994 - 2011.

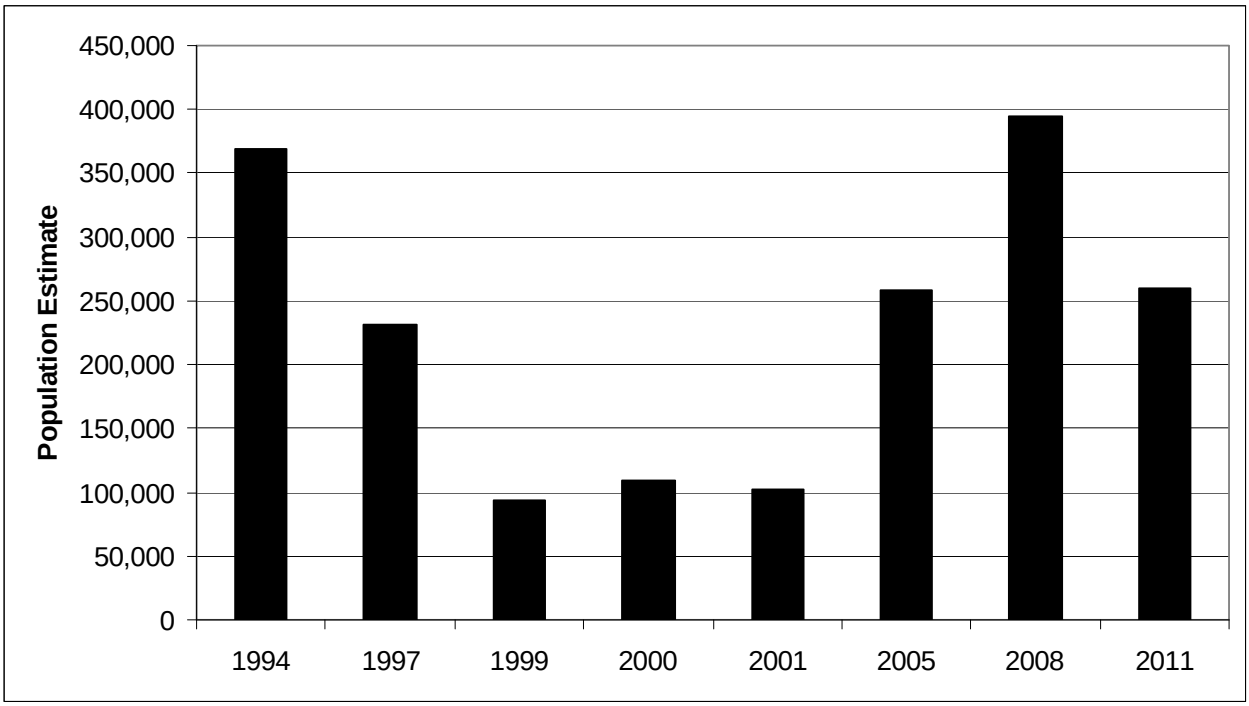


Figure 3. Abundance of Tricolored Blackbirds in 2011 by County (gray indicates counties that were not surveyed.

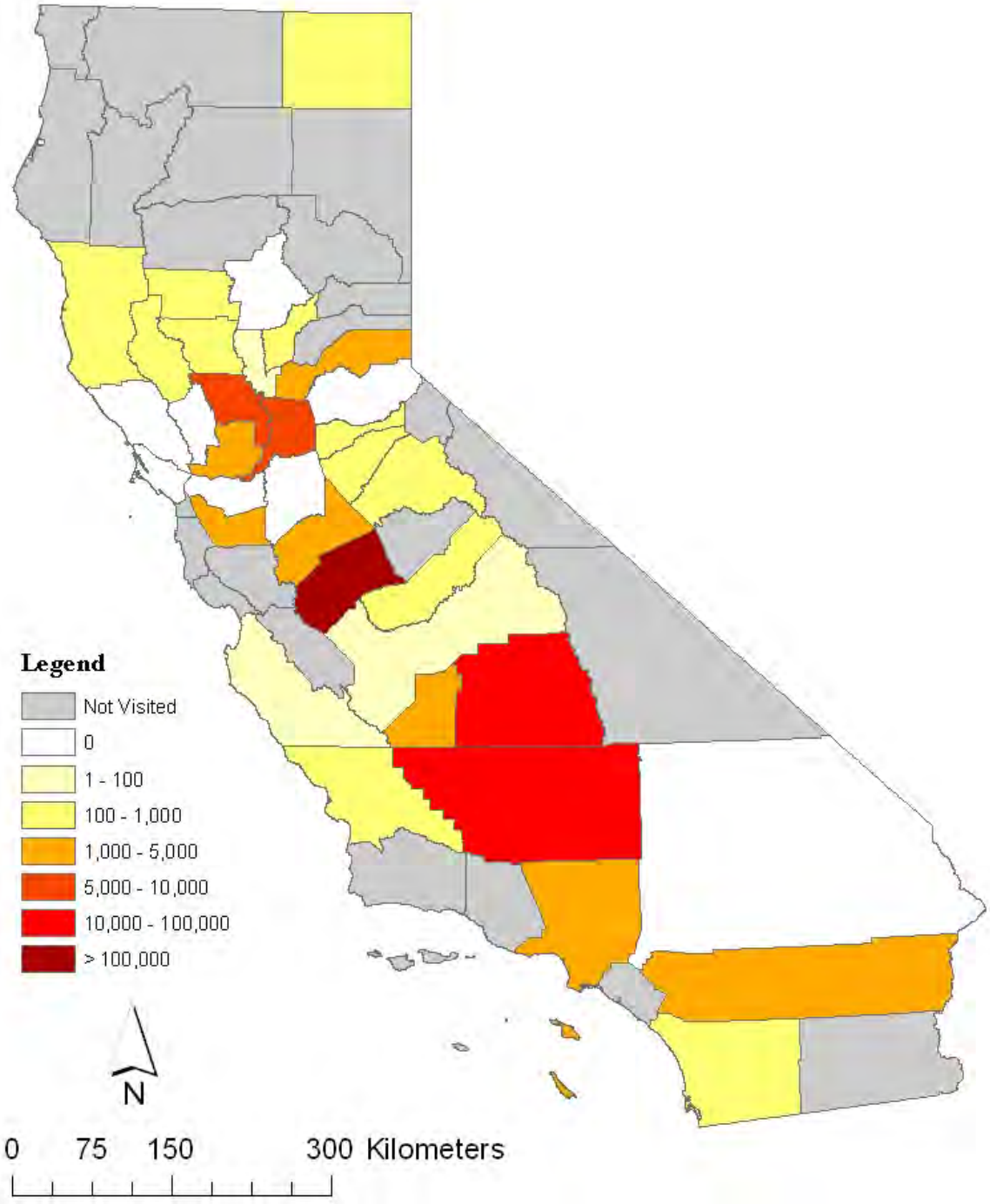


Figure 4. Proportion of birds and colonies observed in different substrates.

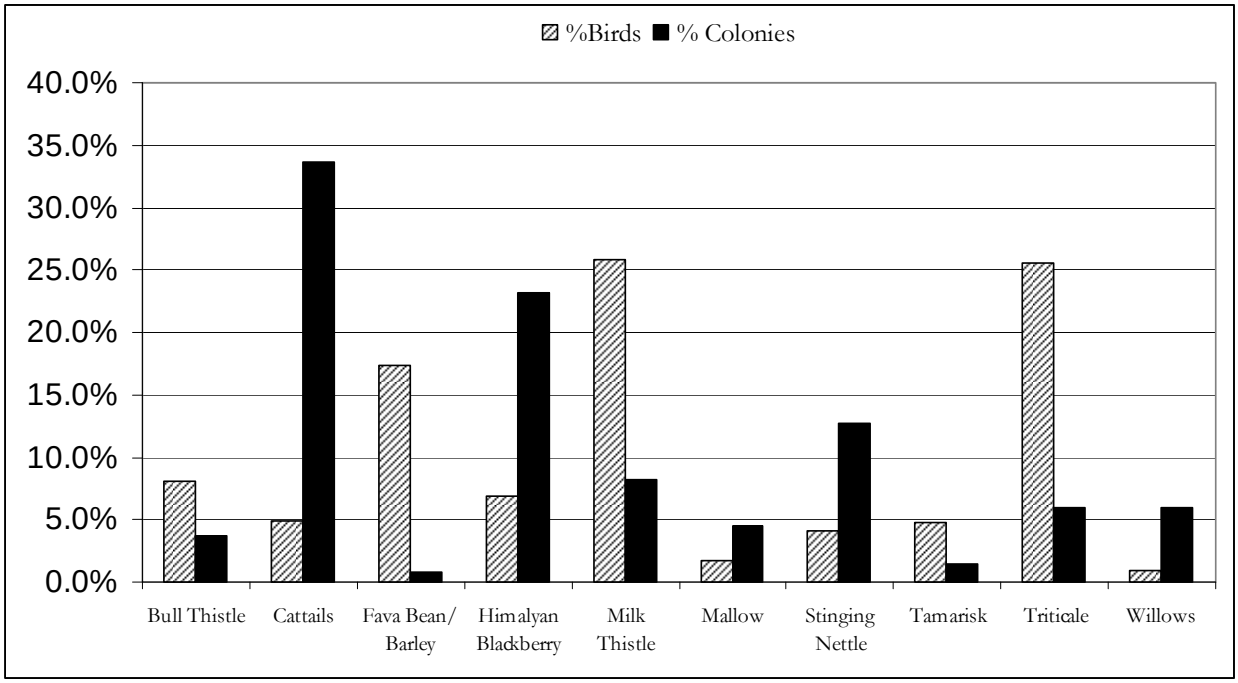


Figure 5. Reproductive success of large colonies in San Joaquin Valley 2005-2010 (Reproduced from Meese, 2009)

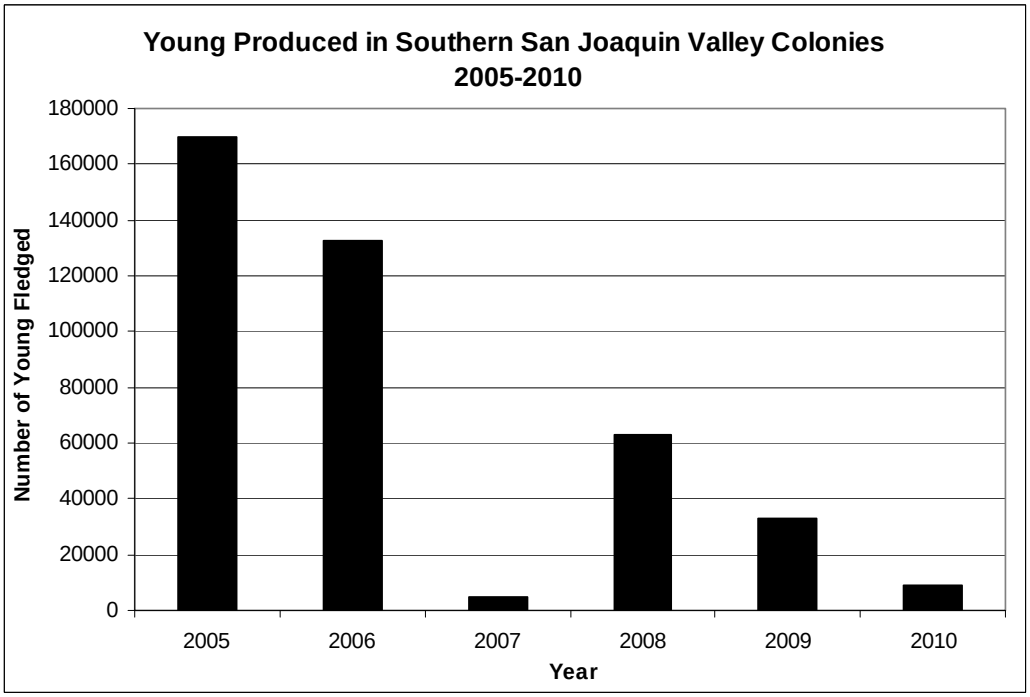


Figure 6. Percent of Tricolored Blackbird population nesting in different regions of California during annual surveys

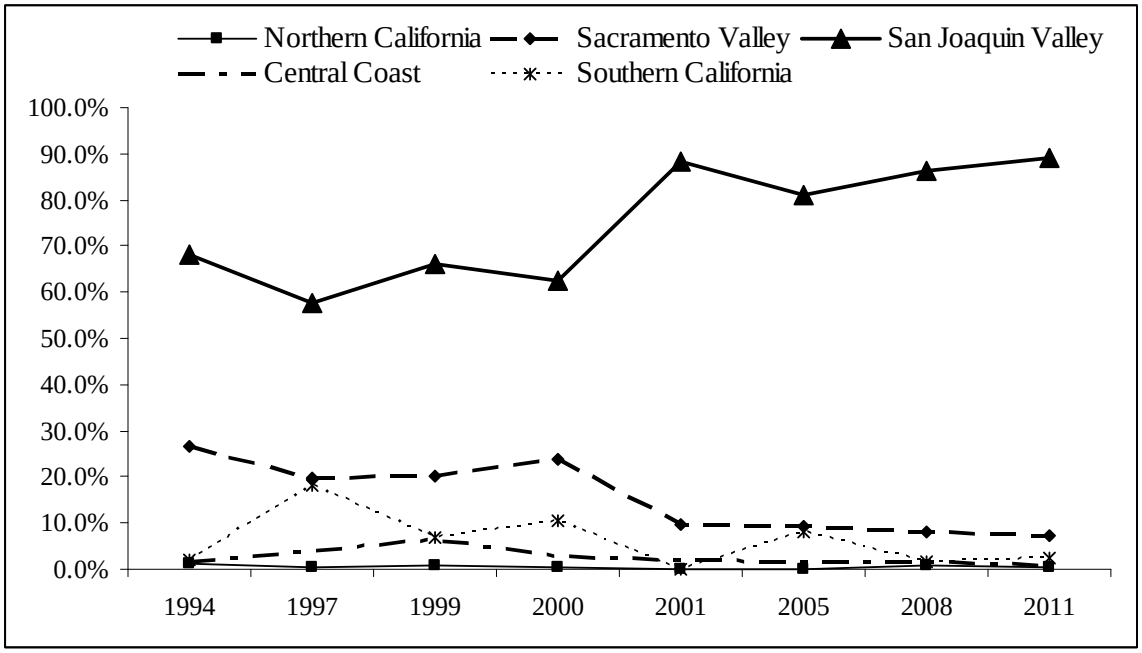
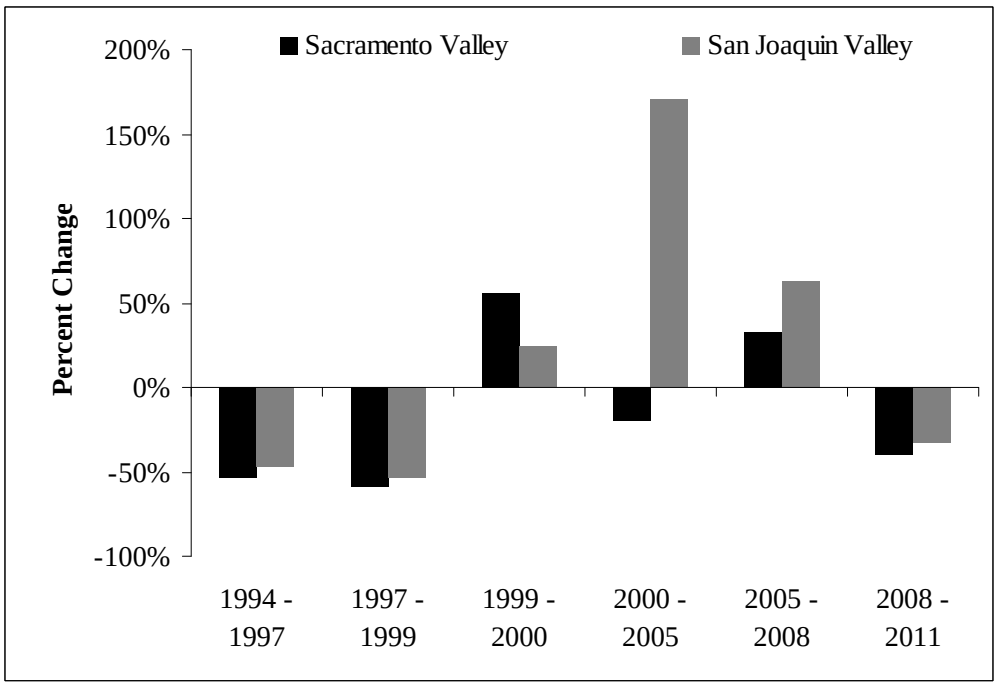


Figure 7. Population estimates from statewide censuses for the Central Valley and southern California subpopulations.



APPENDIX 1

Survey Protocol

Thank you for volunteering to participate in the 2011 Tricolored Blackbird Survey. This survey is conducted every three years in order to estimate population size and track changes in the status of the Tricolored Blackbird population. This information is critical for guiding our conservation efforts and could not be accomplished without your help and the extensive efforts of other citizen scientists across the state. The following protocol outlines the methods to be used during the survey and how to report your observations.

Our goal is to develop the best estimate of the statewide population as possible. The more areas that are surveyed where the presence and number (or absence) of Tricolored Blackbirds is recorded, the better the estimate will be.

I. Scouting

It is very useful to check on nearby sites and search the surroundings before the dates of the official survey. This will streamline the survey and allow you to spend more time at the colonies that require the most effort to observe and count. By April 1 most colonies will be active for their first round of breeding. In the more southerly colonies some nests will already have hatched young. It appears that 2011 could be an 'early' year for Tricolors. Estimating the colony size and observing the behavior and habits of the Tricolored Blackbirds at this point is interesting and good practice.

II. Timing

The 2011 survey window is April 15th to 17th. All observations that will be reported as part of the 2011 survey should be carried out on one or more days between April 15 and 17. Tricolored Blackbirds and colonies can shift locations over relatively short periods of time during the breeding season. Making sure that a comprehensive count is made in a narrow time window helps ensure we are not counting the same birds more than once.

Subsequent observations at any future date should also be noted and can be submitted via the Tricolored Blackbird Portal (http://tricolor.ice.ucdavis.edu).

III. Survey Locations and Priorities

Breeding colony locations are on maps provided to you were all discovered on previous censuses dating back to the early 1980s and 1990s, or incidentally discovered and documented at other times. Some sites were found during the last statewide census in 2008. Each volunteer team has been asked to survey a specific area within their county and, in most cases, to visit specific colony sites. Given there are colony sites that span several decades, we have developed a priority order for surveying these sites:

Priority One: visit and document the number (or absence) of Tricolored Blackbirds at colony sites that have been documented between 2001-2010. These are the most updated and recently active sites and should be the focus of the survey. The 1991-2000 and 1981-1990 sites are lower priority and most likely will only need to be driven by to confirm if habitat exists or not. If habitat does still exist in these older colony sites, please scan the area quickly to confirm the presence or absence of Tricolor colonies.

Priority Two: survey suitable habitat in areas around assigned colonies and in areas where Tricolored Blackbirds have been reported or seen before. Focusing on the habitat surrounding the 2001-2010 points will be most efficient and the color maps of your area will help you identify potential habitat areas more easily.

Priority Three: survey other areas in the county where there is suitable habitat. Ideally you are already familiar with these former colony locations, but if not, the locations of 2001-2010 colonies and other reported sites should be easy to find from the maps we provide.

Ideally you are already familiar with these former colony locations, but if not, the locations of previous colonies and other reported sites should be easy to find from the maps we provide.

IV. Survey Protocol

Viewing the colony

In general, it is best to avoid any disturbance of nesting birds, as the disturbance can cause nest failure. This is especially true for Tricolored Blackbirds and other colony nesting species, since pairs are in close proximity to each other, and a single disturbance can cause the failure of many nests. Under no circumstances should volunteers enter the colony. Colonies should be surveyed from a distance at which the birds are unaffected by the surveyor's presence. Since colonies may be located in a variety of contexts, it is up to the observer to determine how close is too close. Under most circumstances, colonies can be surveyed from just outside the boundaries of the vegetation in which the birds are nesting. The majority of sites will be readily viewable from public roads and allow close and thorough study. Sometimes roadsides provide an elevated view of a colony, and thus a better perspective from which to estimate colony dimensions and numbers of birds.

Private property should also be respected. Do not enter private property unless you have received permission. A Fact Sheet about the survey has been prepared and is available for you to give interested landowners (or others) to inform them about the survey.

Colony Name

Use the colony name given in the list of colonies that you have been provided and that are used to label the colony on the maps (if you have been assigned to specific colonies). If this is a new colony (not already entered in the online database and not in the list of colonies provided), please give the site a logical name. Be sure to not use the name of the private landowner unless you

have permission. Also, please provide directions to the site (if this is a new colony), with enough detail that another observer could get to that location.

Latitude and Longitude

If this is a known colony that you have been assigned to visit, no need to record the site coordinates. For new colony sites, if you have a GPS unit, please use it to collect and record the latitude and longitude of the site during the survey. Record the datum used by the GPS unit (the default for most GPS units is WGS84, but in some cases they may be set to NAD83). If you do not have a GPS unit there are two ways to identify and record the coordinates. First, when entering your new location on the Tricolored Blackbird Data Portal, you can use the built-in Google Maps tool to zoom in and place a marker at the location. The latitude and longitude will automatically be entered when you do this. Alternatively, you can use Google Earth, an extremely useful and user friendly, free global mapping tool. Search for and zoom into the location in Google Earth. Insert a place mark at the location (be sure to move the marker to the actual spot) and the latitude and longitude will be recorded in the “Properties” of that marker.

Duration

Be sure to record the amount of time you spend at each colony site (including those where there are no Tricolored Blackbirds this year). Spend as much time at each colony as you need to get your best estimate of the number of birds. If after 10 to 15 minutes at a known colony site you have not seen any Tricolored Blackbirds, move on to survey new sites or areas. If Tricolored Blackbirds are present, use your own judgment about how much time to spend at the colony. In general, prolonged viewing of a colony will improve your estimate and the larger the colony the more time should be spent. This is particularly true for very large colonies (> 10,000) where it may take some time to evaluate the number of birds. With such large colonies, the more time you spend at the colony, the more the apparent chaos will give way to a semblance of order, enabling you to better estimate the size of the colony and gather observations of singing males, nest-building females, adults feeding chicks, or fledglings.

However, the time spent at one colony is at the expense of visiting more areas and documenting additional colonies. Do not spend too much time at small colonies where you can estimate the number of birds quickly. In this case, finding and counting new birds will be more valuable for the statewide estimate.

Colony Size

A Tricolored Blackbird colony can range from 20 birds to 100,000 or more birds. For this survey, all estimates will be based on visual counts of the birds at a colony. **Please only count the birds that you can see. Do not estimate the number of birds that are hidden from view in the colony substrate.** For small colonies, precise counts can be made, but in larger colonies a visual estimate will be necessary. The method used should be indicated on the data sheet.

Precise Counts

For small colonies (approximately less than 200 birds), a precise count of the number of birds will usually be feasible. With care, this should provide a very precise estimate of the number of birds present.

Scanning Surveys

When large numbers of birds are streaming by, dropping into vegetation, and are otherwise extremely active, precise counts will be impossible. To estimate the number of birds in large groups during this survey there are two ways to estimate number depending on whether birds are flying by or within the colony.

1. *Within the colony:* for birds that are perched or flying around within the colony, it is effective to count the number of birds that fill a specific, repeatable field of view, such as the field of view in your binoculars. Within this field of view, either count precisely or by fives or tens for more dense concentrations, to obtain a reasonable estimate of the number of birds within that view. Then, multiply that number by the number of fields of view that comprise the entire flock or colony.
2. *Flying in Transit:* Depending on the time of day and colony status, there may be streams of birds flying between the colony and an off-colony food or water source. In this case, the number of birds in these flight paths can be estimated by counting the number of birds that move by in a given amount of time and multiplying this by the total time it takes for the flock to pass.

In many cases observers will need to employ both strategies. Position yourself somewhere with good visibility and use a timed count of the flying birds as they leave the colony. Once the flow of leaving birds has dropped off, then conduct a scanning count of the visible birds remaining within the colony itself. The scanning count of the colony should be repeated a few times to improve the estimate. Add the estimate of birds flying away from the colony to the count of birds within the colony. There is space on the data sheet to record your best estimate of birds, as well as what you think the minimum and maximum number of birds are at the colony. These minimum and maximum estimates will give us some sense of how accurate you feel your best estimate is.

Estimating the size of large colonies can be very challenging, and for some, frustrating. Remember that you are providing us with an approximation of colony size and not an exact count. All large colonies that you find will be revisited by one or more experts, regardless.

Sex Ratio

The accuracy of the count will also depend on the sex ratio of birds observed and this depends on activity at the colony. Some colonies that are just forming will have both males and females active so that most individuals can be seen. Once incubation begins however, it will be mostly males that are seen. This information is critical to record. The data sheet includes space for specifying the ratio of males to females seen and whether the colony is active but quiet (indicating incubation may have begun). Tricolored Blackbird flocks often separate into groups of males and females. A quick estimation of the numbers in each sub-flock can be used to

determine an overall sex ratio. Estimate the ratio of males to females in several sub-flocks or fields of view and average them to come up with an estimate.

Colony Observations

Locating new colonies and estimating colony sizes are the primary goals of the survey; however, the characteristics of colonies, the surrounding environment, and the behavior of the birds are all valuable for assessing the status and health of colonies.

Nest Substrate

Observers should record the nesting substrate of observed colonies. There is space on the data sheet to record both primary (dominant) and secondary substrates. Tricolored Blackbird native habitat consists of young, freshwater marsh dominated by tules or cattails, but they also nest in a variety of other vegetation types that provide enough structure and cover to build nests. In addition, they also now regularly nest in grain crops, particularly triticale fields in association with dairy farms. Likely substrate plants are: bulrush/tule, cattails, blackberry, milk thistle, nettle, and grains like triticale, wheat and barley. Other substrates include: willows, cottonwood, Arundo, desert olive, mustard, prickly lettuce, mule fat, coyote brush, raspberry, rice, tamarisk, and poison hemlock.

Colony Surroundings

In addition to locating and viewing the colony, it is useful to describe the surroundings. In addition to nesting substrate, Tricolored Blackbirds also require a source of open water and suitable foraging areas (e.g. upland pasture, grassland, and alfalfa). They can fly several miles to sources of abundant food (like farms with stored grains). Knowing about these locations will assist in future surveys and may help observers find additional breeding colonies as birds move between various nesting sites and a centralized food source. **Any stream of blackbirds is worth following!** On the data sheet, if source of water or stored grains are identified, please record the presence of stored grains nearby and the distance to water. Also, note the dominant land use surrounding the colony (type of agricultural crop, natural vegetation type, etc).

Colony Area

Observers should try to record the approximate length and width of the breeding substrate within the colony. These measures will be used to calculate the total area of the colony. Since breeding substrate often occurs in patches over a larger area, size estimation is approximate. Colony area will be used with what is known about the average nest density within Tricolored Blackbird colonies to develop a secondary estimate of the number of birds in the colony.

- *Measuring Width and Length:* Where possible, observers should pace out two sides of the colony, using strides that approximate one meter. Record the number of meters for these two sides on the data sheet.
- *Aerial Photos:* Using satellite photos that are provided, observers can highlight the boundaries of the colony being used. These marked-up photos should be sent in with

paper copies of datasheets following the surveys. These will provide a means for mapping the extent and calculating the total area of colonies observed.

Behavior and Colony Status

Behavior of birds at a colony and the current activity at the colony are also important sources of information for understanding the seasonal timing of breeding and success of particular colonies. Important observations to record on the datasheet include:

- *Singing:* pronounced chorus of males heard singing at a colony
- *Carrying Nest Material:* females observed carrying nest material (e.g. grass)
- *Colony Quiet:* if the colony is relatively quiet (no singing or large groups of males and females moving about) and primarily males are visible, this may indicate that incubation has begun and females are on nests.
- *Carrying Food:* adults observed carrying food (usually insects protruding from bill)
- *Fledglings:* observed young birds in association with adults.

Mapping New Colonies

In order to better ensure that we record the location of new colonies accurately, please use the street and colony maps provided (or another map you have available and can copy) to mark the location of new colonies you find and visit. These will be stored and used later for data quality checking.

Survey Routes

Using the maps provided or other maps you have available to indicate the routes taken during the survey by highlighting the roads and areas surveyed. These should be sent in with the datasheets and aerial photos following the survey.

Total Survey Time and Mileage

Please record the total time, number of observers in your team, and miles you drove for the survey. These can be recorded separately and emailed to Keiller Kyle (kkyle@audubon.org).

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Results of the 2014 Tricolored Blackbird Statewide Survey

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July 31, 2014

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Acknowledgments

I thank the U.S. Fish & Wildlife Service for requesting my assistance in coordinating the 2014 Tricolored Blackbird Statewide Survey and for providing assistance in identifying county coordinators and survey participants. I thank Monica Iglecia of Audubon California for assistance is recruiting county coordinators and survey participants. I thank Neil Clipperton, non-game biologist for California Department of Fish and Wildlife for helping to organize the survey, participating with me in the survey of Yolo County, and for financial support for the preparation of this final report. I thank the county coordinators for applying their vast knowledge of tricolor distribution and occurrence in California and for recruiting highly qualified survey participants. I thank especially Ted Beedy for his vigorous efforts to recruit highly qualified survey participants from the staff of Dudek environmental. And finally, I thank the nearly 150 survey participants for making this the most comprehensive statewide survey ever and for helping to thoroughly document the distribution and abundance of California's blackbird in spring, 2014. The 2014 statewide survey could not have been conducted without their participation and passion.

Introduction

The tricolored blackbird, *Agelaius tricolor*, is unique to California and much loved. Among its many interesting attributes, the tricolor is colonial, and nests in large groups that place heavy demands upon the local biota, especially insects. Globally, colonial species are believed to be highly vulnerable, and many have become conservation targets. The tricolor, originally a marsh dweller found by the millions in both Central Valley and coastal locations (Neff 1937), has responded to widespread, severe reductions in its native breeding and foraging habitats by learning to utilize a wide range of native and introduced wild and cultivated plant species as nesting habitat and to feed on a diverse array of plant and animal foods using foraging strategies as diverse as any North American passerine.

During the breeding season, the tricolor is insect-dependent as females require insects to form eggs and nestlings require insects for their first 9 days of life. These two attributes, coloniality and insectivory, place severe constraints on a native passerine living in anthropogenic landscapes, where both insects and blackbirds are typically considered pests.

Because much native nesting habitat has been converted to agriculture and stored grains provide an essentially limitless food resource, tricolors have since the 1980's nested in large numbers in association with dairies. This change in nesting habitat has had serious consequences: first, annually all of the eggs and nestlings in entire colonies are lost when the grain fields serving as nesting substrates are harvested as part of normal agricultural operations, and second, grains do not provide the nutrition required for breeding, so even conserved colonies are often unproductive, with few fledglings produced.

Following the breeding season, most tricolors are found in the Sacramento Valley where they aggregate with red-winged and other blackbird species and feed, often in large flocks, on ripening rice. An unknown number of adult tricolors is shot each fall due to their similarity in appearance to red-wings, as red-wings are exempted from protection under the Migratory Bird Treaty Act and are legally shot each fall as they feed on ripening rice.

As a result of these and other factors, tricolor populations plummeted in the 20th Century from several million birds to a few hundred thousand (Beedy and Hamilton 1997), and in 2004 the tricolor was petitioned for listing under the California and federal Endangered Species Acts. Although these petitions were denied, the tricolor is listed as a priority species of special concern and its abundance has continued to decrease (Meese 2013). Recent research showed that the species has suffered chronically low reproductive success since 2007 and that reproductive success is correlated with insect abundance (Meese 2013). The California Fish and Game Commission has included on its August 6, 2014 agenda a consideration for an emergency listing of the tricolor due primarily to the continuing rapid decline in abundance as documented in the 2014 Statewide Survey.

The triennial Tricolored Blackbird Statewide Survey is the primary means by which the species population is monitored, and this report summarizes the results of the 2014 Survey.

Methods

I was asked to coordinate the 2014 Statewide Survey by U.S. Fish & Wildlife Service staff in late autumn, 2013. I accepted this *pro bono* position as I had worked with tricolors for a decade and had numerous professional contacts who would likely help with soliciting qualified individuals to participate as well as help to coordinate the survey.

Survey Dates.

Tricolored blackbirds may most accurately be counted when at their breeding colonies, as the birds are relatively sedentary and much effort has been expended in locating and documenting their colonies, with many concerned citizens entering records of colony locations into the Tricolored Blackbird Portal (tricolor.ice.ucdavis.edu). But the species breeds throughout a long breeding season that may begin as early as late February in some parts of the southern San Joaquin Valley (S. Frazer, pers. comm.) and ends in most years in early August in the southern Sacramento Valley (Meese, unpub. data). Thus, the exact timing of the statewide survey is an effort at optimization: to time the survey to the interval when the maximum number of birds is found in breeding colonies, before the first colonies to establish have completed the breeding cycle and prior to the period when first breeders disperse north to breed again (Hamilton 1998).

The 2014 Statewide Survey was held over 3 days, from April 18-20. A three day interval is used to maximize participation by the largest number of volunteer observers while minimizing the risk of double-counting birds that may have moved from one breeding colony (as following cessation of breeding or colony abandonment) to another.

Coordination.

The triennial statewide survey has since 2008 been organized as essentially a three tiered effort, and I followed this design in 2014:

1st tier is a statewide coordinator,

2nd tier is county coordinators, and

3rd tier is volunteer participants.

Statewide Coordinator.

I served as the statewide survey coordinator. The statewide survey coordinator is responsible for identifying and recruiting qualified persons to serve as county

coordinators, producing and disseminating via the Portal documents to support the survey (survey protocol, survey field form, descriptions of colony estimation methods, natural history information, and several others), communicating with county coordinators and persons interested in volunteering to participate in the survey, assembling all of the records of observations, ensuring that each record is checked for accuracy, assembling and ensuring the quality of the entire data set, and preparing this final report.

County Coordinators. Beginning in late 2013 I began to communicate with colleagues consisting of agency and NGO staff and environmental consultants with much field experience with tricolored blackbirds. I requested their assistance in the survey effort by serving as county coordinators, with the assumption that those with the most local knowledge and experience could best survey a species that occurs throughout California but is for many notoriously difficult to find during the breeding season. Each county coordinator was known by me or recommended to me by one with much experience with tricolored blackbirds to be highly qualified and knowledgeable about the occurrence of tricolors in their respective counties. I received commitments from each county coordinator to volunteer to organize thorough surveys of breeding tricolors in their respective counties. In spring, 2014 I met with Monica Iglecia of Audubon California who offered to assist my efforts and to use her position to solicit county coordinators for the few counties that still lacked them as well as to advertise via Audubon chapter newsletters and similar venues for interested volunteer participants - concerned citizens who knew about the decline in tricolors and who wished to help to monitor the health of the species.

Participants. Statewide survey participants consisted of the statewide coordinator and the county coordinators plus individuals who were selected by county coordinators, individuals who responded to requests for assistance posted to the Portal and Audubon California appeals, and individuals who contacted one of the coordinators directly to offer to participate. In the majority of cases, volunteers had participated in previous statewide surveys so were familiar with protocols and procedures, including data entry via the Portal, but in a minority of cases volunteers were participating in their first statewide survey and received assistance in protocols and procedures from county coordinators and from materials posted on the Portal.

Tricolored Blackbird Portal. The Tricolored Blackbird Portal (tricolor.ice.ucdavis.edu), developed in 2008, was used to help to coordinate at the county and individual levels by disseminating information on protocols to county coordinators and volunteer participants, providing pdf copies of field forms for download, and pdf copies of colony location maps for download for those county coordinators who requested them.

Timeline. County coordinators were identified and asked to participate from November, 2013 through February, 2014, with the final 3 county coordinators identified during March, 2014. As each county coordinator was identified, he/she was asked whether they needed help in identifying survey team members. The majority of county coordinators preferred to assemble their own survey teams, but the minority who requested assistance were put in touch with individuals who had responded to a request for assistance posted to the Tricolored Blackbird Portal as well as to several Audubon chapter requests via newsletters and postings to websites.

Training Session. A single training session was held on Sunday, April 13, 2014 at the Glide Ranch outside Davis, Yolo County. The training session was jointly provided by Audubon California staff

(Monica Iglecia and Megan Hertel) and myself, and consisted primarily of a PowerPoint presentation that I developed that covered species characteristics for field identification, a review of the species' natural history, a review of its breeding behavior, breeding colony identification, characteristics, and size estimation, and a review of data entry into the Portal. A portable document format (pdf) version of the training presentation was posted to the Portal for use by survey participants who were unable to attend the training session.

Data Entry. In general, survey participants entered records of their observations into the Portal. In some cases, participants provided their results to county coordinators, who then entered the results for the entire county into the Portal. And in two instances, county coordinators provided the results of the county surveys to me and asked me to enter their records into the Portal.

Fundamentally, the Portal contains two types of records, location records and observation records. Location records consist of geographic and ecological information (e.g., nesting substrate type, surrounding land uses) that describe specific locations where birds were confirmed to breed, as well as locations of aggregations of non-breeding birds. Observation records consist of the who, what, when, where information specific to occurrences of birds at breeding colonies or in non-breeding aggregations (who saw them, how many were there, where they were, when they were seen, etc.).

For security and data integrity reasons, participants lacking Portal accounts were provided them typically within minutes after they were requested via email, and a review of data entry procedures was provided on the Portal. As all observation records must be associated with location records, participants were instructed to add all new location records (records of locations of breeding colonies that did not already exist in the Portal) first, and then to add records of their observations to these location records. Note that we emphasized the value of records of non-occupancy (observations of unoccupied sites to confirm absence of birds), as the metric used to estimate survey completeness was the number of known locations surveyed, and since most sites surveyed were not occupied by breeding birds, it was essential to identify both occupied and unoccupied sites to estimate the thoroughness of the survey effort.

Results

The 2014 Tricolored Blackbird Statewide Survey was conducted from April 18 to April 20, 2014.

A total of 38 county coordinators and 143 volunteers participated in the survey.

A total of 145,135 birds was counted in 37 counties from 41 counties and 802 locations surveyed. Tricolored blackbirds were observed at a total of 143 locations (Table 1). This represents a near quadrupling of the number of locations surveyed since the 2000 statewide survey, when only 206 sites were surveyed (Hamilton 2000).

The rate of decline in the number of tricolors appears to be increasing. From 2008 to 2011 the number of tricolors dropped by 34%, from 395,000 to 258,000 birds (Kyle and Kelsey 2011), but from 2011 until this year the number of tricolors dropped by 44%, from 258,000 to 145,000 birds (Figure 1).

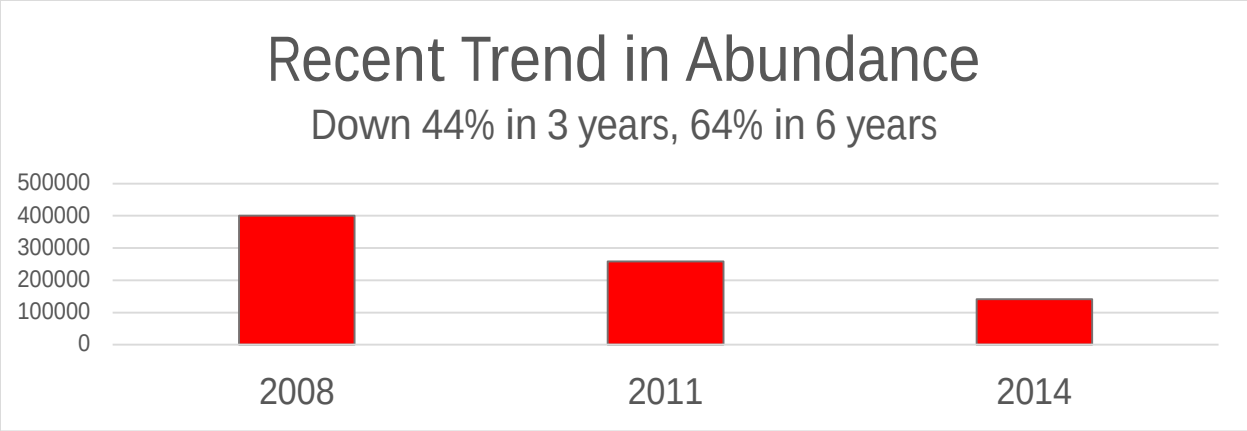

Figure 1. Population trend from 2008 to 2011.

A total of 75 new location records was added to the Portal by 27 different users as result of statewide surveys. This is the same number of new location records as was added as a result of the 2011 statewide survey (Figure 2).

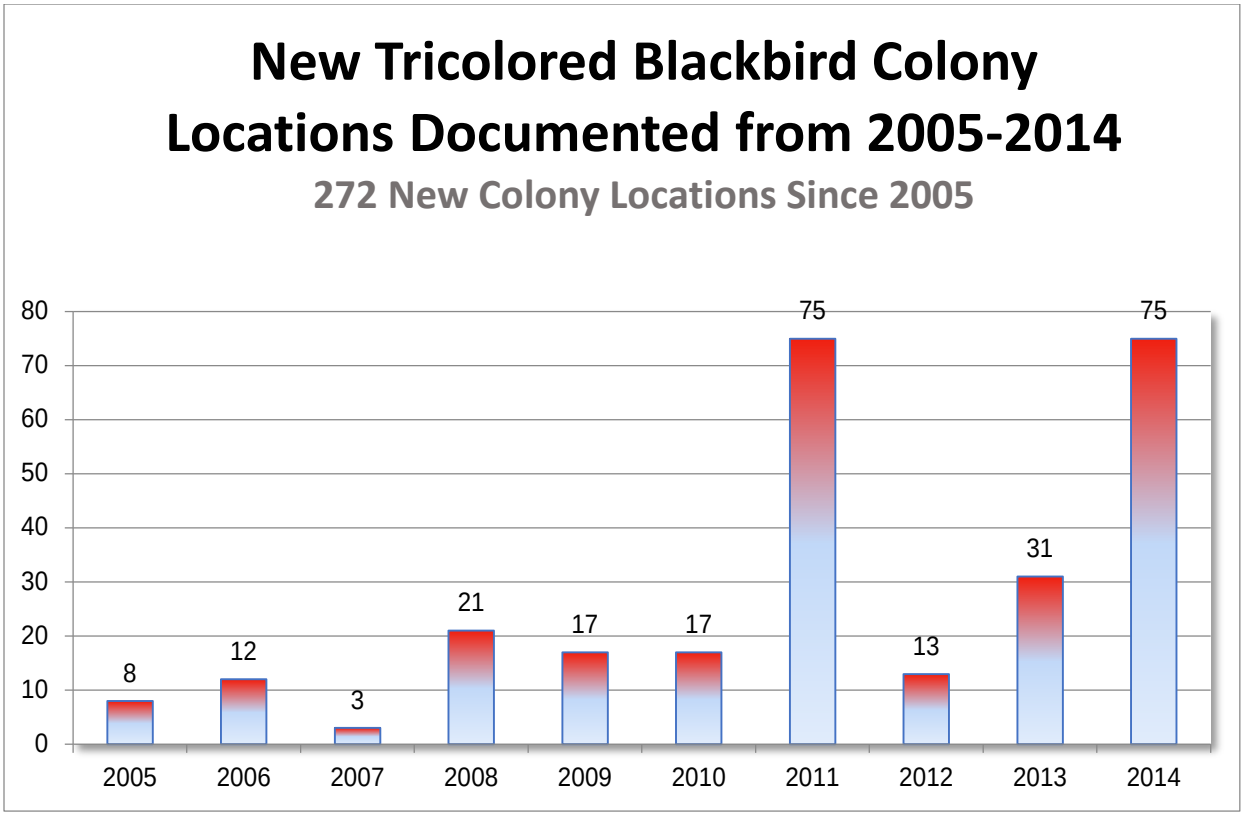

Figure 2. New colony location records added to Portal.

Table 1 presents a summary of the results by county.

Table 1. Statewide Survey Results by County.

County	Locations Surveyed	Locations Occupied	Number of Birds	Proportion of Total
Alameda	27	1	50	0.034
Amador	6	2	5500	3.793
Butte	6	1	60	0.041
Calaveras	9	5	404	0.279
Colusa	23	0	0	0
El Dorado	9	5	1375	0.948
Fresno	25	1	6	0.004
Glenn	29	1	300	0.207
Kern	64	12	3977	2.743
Kings	15	1	5000	3.448
Lake	6	1	150	0.103
Lassen	2	1	232	0.16
Los Angeles	11	6	4707	3.246
Madera	10	2	27166	18.735
Mariposa	1	1	13	0.009
Mendocino	5	1	100	0.069
Merced	46	5	10532	7.263
Monterey	22	6	399	0.275
Napa	11	1	70	0.048
Orange	17	1	14	0.01
Placer	20	4	17600	12.138
Riverside	28	9	4368	3.012
Sacramento	98	19	29272	20.188
San Benito	13	1	80	0.055
San Bernardino	10	6	1380	0.952
San Diego	30	6	1417	0.977
San Joaquin	9	2	515	0.355
San Luis Obispo	29	5	98	0.068
Santa Barbara	18	7	935	0.645
Santa Clara	6	0	0	0
Santa Cruz	8	0	0	0
Shasta	15	1	250	0.172
Solano	15	3	610	0.421
Sonoma	4	0	0	0
Stanislaus	36	10	8852	6.105
Sutter	18	1	8	0.006
Tehama	5	2	300	0.207
Tulare	30	5	18259	12.592
Tuolumne	8	3	825	0.569
Yolo	33	2	81	0.056
Yuba	25	3	268	0.185

Breeding colonies were established in 12 major nesting substrate types, Table 2, and non-breeding birds were observed around dairies and in foraging areas lacking nesting substrates.

Table 2. Number of colonies and breeding birds by nesting substrate type.

Primary Substrate Type	Number of Colonies	Number of Breeding Birds	Proportion of Total
Bull thistle (*Cirsium vulgare*)	3	1,020	0.007
Bulrush (or tule)	16	6,965	0.048
Buttonwillow (*Cephalanthus occidentalis*)	1	8	-
Cattails (Typha spp.)	44	12,817	0.088
Himalayan blackberry (*Rubus armeniacus*)	41	59,308	0.41
Milk thistle (*Silybum marianum*)	2	2,080	0.014
Mustard (*Brassica* spp.)	2	144	-
Mustard in triticale	1	120	-
Stinging nettle (*Urtica dioica*)	6	528	-
Tamarisk (*Tamarix* spp.)	1	5,000	0.034
Triticale (*Triticum* x *Secale*)	9	55,118	0.38
Wheat (*Triticum* spp.)	1	143	-
Willows (*Salix* spp.)	2	1024	0.007
Other	13	898	0.006

The numbers of birds seen at occupied locations ranged from 1 to 24,000, with only a single colony in Madera County (Road 12 Avenue 24) consisting of more than 20,000 birds and only 3 colonies consisting of 10,000 or more birds.

The number of birds observed differed markedly by bioregion. Southern California (Ventura, the far southern part of Kern, Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties) had 12,386 birds, up from 6,000 in 2011, the San Joaquin Valley (from Kern County in the south to San Joaquin County in the north) had 73,412 birds, coastal locations (from Alameda County to Santa Barbara County) had 1,732 birds, the Sierra foothills (Amador, Calaveras, El Dorado, Placer, and Sacramento counties) had 25,717 birds, and the Sacramento Valley (from Yolo County in the south to Tehama County in the north) had 31,531 birds.

Bird numbers were down markedly from the two previous statewide surveys in the San Joaquin Valley, especially in Kern and Merced counties, where the breeding birds had recently been most concentrated (Figure 2). Overall, the number of breeding birds in the San Joaquin Valley dropped 78% in 6 years, from 2008 to 2014 (Table 3), and the number of birds seen in counties along the Central Coast was less than 10% of that seen in 2008 (Table 4).

Table 3. Recent trend in numbers of birds in San Joaquin Valley colonies.

Year/County	2008	2011	2014
San Joaquin	0	0	515
Stanislaus	21,910	1,900	8,852
Merced	154,674	139,170	10,532
Madera	117	505	27,166
Fresno	1,000	400	6
Tulare	90,800	23,950	18,259
Kings	2,500	2,950	5,000
Kern	69,702	61,825	3,152*
Totals	340,703	230,700	73,482

*Central Valley locations only

Table 4. Recent trend in numbers of birds in Central Coast counties.

Year/County	2008	2011	2014
Alameda	28	2,200	50
Contra Costa	358	0	N/R
Monterey	50	10	399
San Benito	66	N/R	80
San Luis Obispo	6,242	197	98
Santa Clara	50	0	0
Santa Cruz	220	0	0
Totals	7014	2407	627

However, the number of birds seen in Sacramento County and the Sierra Nevada foothills showed no decline or marked increases (Table 5, Figure 1). The 29,272 birds seen in Sacramento County exceeded the total seen in any statewide survey since 1997, when 31,338 birds were seen in the county (Beedy and Hamilton 1997).

Table 5. Recent trend in numbers of birds in Sacramento and Sierra foothill counties.

Year/County	2008	2011	2014
Amador	6600	350	5500
Calaveras	385	120	404
El Dorado	0	0	1375
Placer	12,050	3,310	17,600
Sacramento	3,551	6,105	29,272
Totals	22,586	9,885	54,151

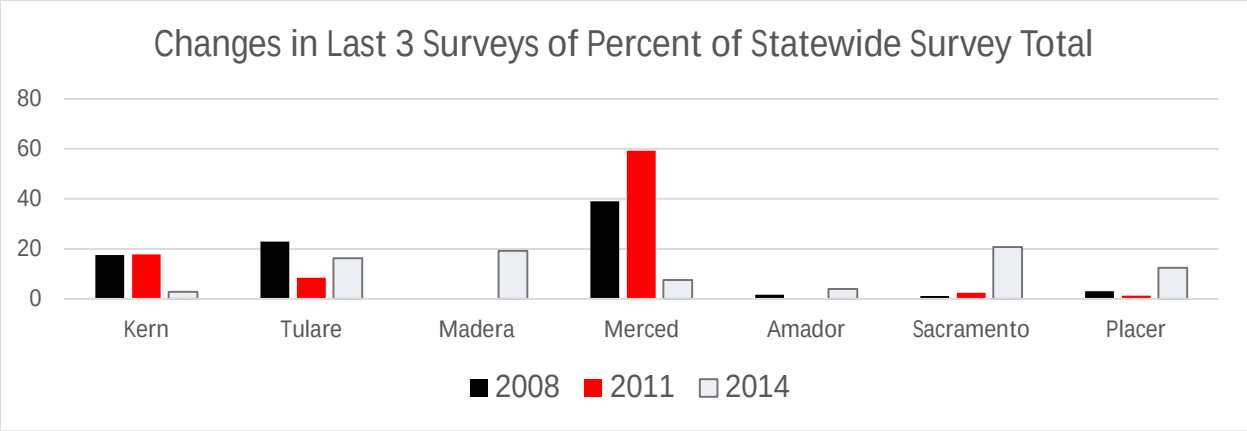

Figure 3. Changes in Percentages of Statewide Total of Select Counties.

A total of 93,000 birds was seen in the 10 largest colonies, 64% of the total. This is a much lower percentage of the total than was seen in the 10 largest colonies in 2011, when 208,800 birds, or 81% of the total, were seen in the 10 largest colonies, and in 2008, when 306,00 birds, 77.5% of the total, were seen in the 10 largest colonies. This reflects a downward trend in the sizes of the largest colonies (Figure 4).

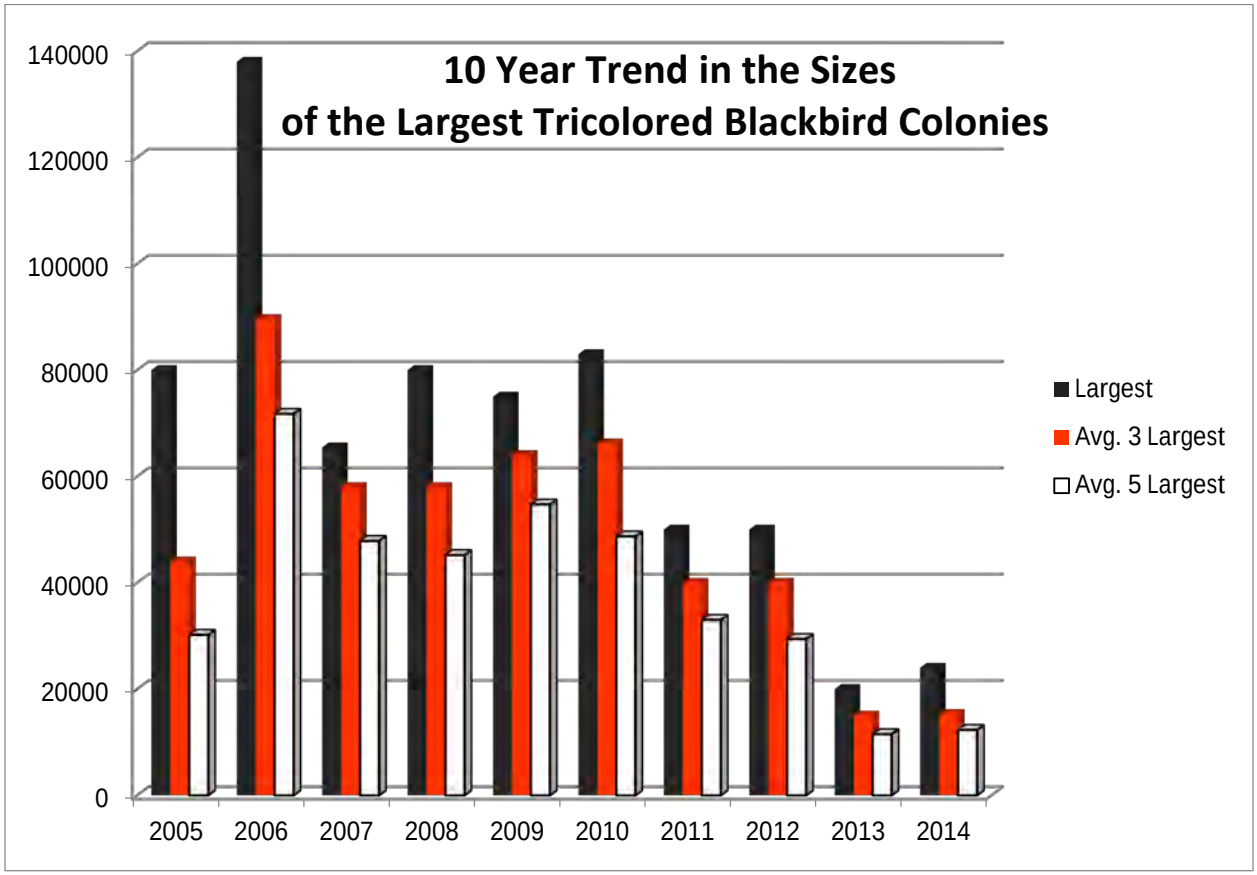

Figure 4. 10 Year Trend in the Sizes of the Largest Colonies.

Discussion

The volunteer statewide survey has since 1994 been the primary method by which the number of tricolored blackbirds in California is estimated. Although the problems inherent in using a volunteer survey to estimate the number of birds in a territory as vast as California are great (Link and Sauer 1998), this is the best tool available for documenting trends in California's tricolored blackbird population.

The 2014 statewide survey is believed to have been the most thorough ever conducted. Concerned citizens have entered dozens of new location records into the Portal, resulting in a rapid increase in knowledge of where the birds breed, and the number of locations surveyed increased from 361 in 2008 to 802 this year. Yet despite this rapid increase in knowledge, the number of birds in California as estimated by the Statewide Survey again declined sharply.

The use of the Portal as a citizen-supported web-based resource for data entry and management has greatly improved our knowledge of the breeding season distribution of the species. As recently as 1997 only 114 locations were surveyed during the Statewide Survey (Hamilton 2000), but this year the number of locations surveyed exceeded 800 for the first time. And a total of 27 different users entered 75 new location records into the Portal in the first 6 months of 2014. Thus, the Portal has helped to meet the needs of concerned Californians to contribute to tricolored blackbird conservation by enabling them to enter records of their observations and increase our knowledge of where, when, and how many birds breed.

The results of the 2014 Tricolored Blackbird Statewide Survey show that there are far fewer birds now than in the recent past. The results of the past 3 statewide surveys (2008, 2011, and 2014) are most directly comparable due to similar methods and levels of effort, unlike previous statewide surveys that suffered from wide variations in methods and levels of effort (Hamilton 2000). And the development of the Tricolored Blackbird Portal in 2008 provided a previously unavailable public resource that has met the needs of concerned citizens and encouraged their participation in tricolored blackbird conservation efforts while greatly improving data quality and management.

The rate of decline in the number of tricolors is alarming and appears to be accelerating: a comparison of the results of the 2008 to 2011 interval shows that the number of tricolors declined by 34%, from 395,000 to 258,000 birds. But from 2011 to 2014 the number of birds declined by 44%, from 258,000 to 145,000 birds (Figure 1). Thus, conservation efforts to date have been insufficient to stem the decline in the number of tricolors and the rate of decline is increasing.

There are likely several reasons for the decline, but clearly the rate of mortality of adults far exceeds that of the recruitment of new breeding birds into the population, and chronically low reproductive success since 2007 appears to be a major factor causing the disparity between mortality and recruitment (Meese 2013). Many sources of mortality are of essentially unknown severity (e.g., disease, predation, starvation) but some sources of mortality are known and must be eliminated. The destruction of colonies through the harvest of nesting substrates continues as an annual event in colonies established in grain fields surrounding dairies: at least two colonies were destroyed during the harvest of the triticale nesting substrate in Merced County in 2014, with unconfirmed reports of a third. Also, an unknown number of adult tricolors is killed each autumn when red-winged blackbirds (*Agelaius phoniceus*) are shot while causing depredations to ripening rice in the Sacramento Valley. As the two

congeneric blackbird species are extremely similar in appearance and flock together in autumn, the tricolor may be inadvertently shot while the red-wing is legally shot to prevent damage to rice.

The number of tricolors is down steeply statewide, but the decline is not uniform across different regions in the state. The decline is most pronounced in the San Joaquin Valley and along the Central Coast. The number of birds in the San Joaquin Valley plummeted 78% in 6 years, from 340,700 to about 73,500 birds, and the decline in especially alarming in Kern and Merced counties (Table 3). Along the Central Coast, the number of birds is down 91% in 6 years, from 7,014 to 627 birds (Table 4).

It is possible that some of the decline along the Central Coast is due to the severe drought that began in 2013 and to the resulting temporary loss of nesting habitat, although additional, permanent landscape changes such as conversions of coastal scrub and grassland foraging areas to vineyards are reducing the area suitable for breeding by tricolors. The losses of native habitats have been widely cited as among the most important causes for the long-term population decline (Beedy and Hamilton 1999).

Unlike in the San Joaquin Valley and along the Central Coast, during the same 6 year interval the number of tricolors in the Sierra Nevada foothills and Sacramento County have increased by about 145%, from about 22,500 birds to about 54,000 birds (Table 5). These numbers suggest either that tricolors 1) are moving into the foothills from other regions or 2) are breeding relatively more successfully in the Sierra Nevada foothills than they are in the San Joaquin Valley or Central Coast.

Southern California presents unique challenges to tricolor conservation, as urbanization and the movement of the dairy industry into the San Joaquin Valley have reduced the account of habitat suitable for tricolor nesting and foraging (Unitt 2004). The number of birds seen in southern California was up during the same 6 year interval, from 5,487 birds in 2008 to over 12,000 in 2014. A large and rapid increase in the number of birds in southern California has previously been observed: in 1997 a visually estimated 35,000 birds bred at the Hemet/San Jacinto Constructed Wetlands, and in 2000 a visually estimated 10,000 birds bred at the same location. Rather than spectacular reproductive success *in situ*, it is likely that these rapid increases result from birds moving from the Central Valley into southern California. Although this movement had been suspected due to an absence of genetic differentiation between the southern California and Central Valley regions (Berg, Pollinger, and Smith 2010), the first confirmation of such movements came in April, 2014 when a biologist working at a DOD installation in San Bernardino County sent two photographs of female tricolors foraging on her property to me for species identification. In examining her photographs I noticed that one bird was banded on the left tarsus. As I am the only person banding tricolors on the left tarsus, this is a bird that I banded, and I have only banded in the Central Valley and in one coastal location. Thus, this photograph likely represents the first confirmation of birds moving into southern California from the Central Valley and suggests a mechanism by which bird numbers could rapidly increase in response to especially favorable nesting conditions. Despite the increase in the number of tricolors in southern California, the number of birds is not sustainable and the species remains conservation-dependent.

The causes for these regional differences in the trend in abundance are poorly known but the chronic poor reproductive success of Central Valley colonies is well documented and correlated with low insect abundance (Meese 2013). A recent study from Europe has shown that songbird populations are declining in regions with low insect abundances and high neonicotinoid insecticide concentrations (Hallmann et al. 2014). Neonicotinoid insecticides are widely used in California (Starner and Goh 2012) but their effects on songbird populations remain unstudied.

Sierra Nevada foothill locations are, in general, surrounded by rangelands, and it is possible that the rangeland colonies have a relatively greater or more consistent prey base of terrestrial insects and that these support relatively greater reproductive success. Also, the losses due to the harvest of the nesting substrates while eggs and/or young are still in the nest that occur annually in the San Joaquin Valley are not mirrored in foothill locations. Additional work in foothill locations is needed to better understand the factors responsible for the apparent increase in abundance of tricolors during the interval when their abundance is plummeting statewide. This work should focus on the fates and reproductive success of foothill colonies and the relative abundance of insects preferred by foraging birds.

Do these results suggest that California's Central Valley and Central Coast have lost their ability to support breeding by a native, near-endemic colonial insectivorous passerine? Has the carrying capacity of the Central Valley and Central Coast been permanently reduced? How many breeding birds can the Central Valley and Central Coast support? If this decline represents a permanent reduction in the carrying capacity of the San Joaquin Valley and the Central Coast to sustain the species, it is difficult to imagine a scenario where tricolor numbers can be recovered to 500,000 to 750,000 individuals – numbers that have been used to define "recovery" of the species by members of the Tricolored Blackbird Working Group. In the immediate past, the San Joaquin Valley held the vast majority of birds during the statewide survey (e.g., Kelsey 2008, Kyle and Kelsey 2011), so if it is no longer able to do so and the birds must breed elsewhere, only a northward shift in the early breeding distribution of the species that includes much of the Sacramento Valley may provide the potential for supporting hundreds of thousands of breeding birds. Although the timing of the Statewide Survey means that an emphasis is placed on first nesting attempts and that second nesting attempts in the Sacramento Valley are poorly represented, the reproductive success of nesting attempts in the Sacramento Valley has been chronically low (Meese 2011, Meese 2013) and there is little reason to believe that the Sacramento Valley is better able to sustain the species than is the San Joaquin Valley. Thus, the entire Central Valley appears to be increasingly unsuited to nesting by a colonial, insectivorous passerine and tricolor abundance is expected to continue to decline. Vigorous efforts are needed to identify and replicate conditions that exist in association with the few remaining successful, productive colonies in the Central Valley and Central Coast.

These regional differences in population trends have potentially great significance for conservation efforts and suggest that research and monitoring efforts ought to be expanded to include foothill locations. If it is found that the time-averaged reproductive success of foothill colonies is relatively greater than that of Central Valley colonies, this may justify an increase in emphasis and investment in on-the-ground actions to increase the number of tricolors breeding in foothill locations. At the same time, an analysis of potential threats is warranted as landscape changes have already eliminated much of the tricolor's former habitat throughout its range, and if such changes reduce the amount of suitable habitat in the foothills, few options will exist to restore the number of tricolors to a sustainable level.

With the on-going and apparently increasing rate of decline in abundance (Figure 1), it may be appropriate to begin to consider whether the population status warrants a listing for protection under the California Endangered Species Act. Although a listing will be controversial and may lead to conflict, the volunteer, non-regulatory efforts of the Tricolored Blackbird Working Group over the past decade have failed to stem the decline and the persistent reproductive failures make the long-term prospects for the species, and its potential for recovery, less certain. If a listing would result in the elimination of the known sources of mortality (harvest of nesting substrates before the young have fledged and

shooting in autumn in rice paddies), that might increase the number of young produced while reducing the rate of adult mortality and stabilize the number of birds. If a listing would help to provide funding for on-the-ground actions that result in increased reproductive success, that may help to increase the number of tricolors produced, increase the rate of recruitment, and increase the population. A vigorous, long-term, well-funded, and strategic approach involving a wide variety of stakeholders, including industry, will be needed to stop the decline in the number of tricolors and begin to restore the population to a self-sustaining level. A failure to act will result in the continued decline in abundance in California's blackbird.

Recommendations

1. Eliminate all known sources of mortality, including the losses of eggs and young via harvest of their nesting substrate and adults in autumn when causing depredations in rice.
2. It is essential to develop a mechanism for conserving at-risk colonies. A mechanism is required that consists of 1) field workers who *detect settlements* of birds in ephemeral nesting substrates (e.g., triticale fields), 2) a person or persons to whom the field worker *reports the presence of birds in ephemeral, at-risk locations* and who has the responsibility of contacting landowners and informing them of the protected status of the birds and of funding available to compensate them, 3) a cooperative extension specialist or other independent expert who *estimates the loss in value* of the crop as a result of the harvest delay, 4) a field worker who *monitors and documents the results* of conservation actions (successful delay until a week past average date of fledging, an estimate of the number of young fledged, a description of the process of harvest in those cases where fledglings are still present in the field when it is being harvested with an emphasis on the effects on the behavior of the fledglings post-harvest). 5) All of these *actions should be documented and then be reported* to a meeting of the Working Group and provided in a report that is posted to the Portal.
3. A legislative fix to eliminate exemption of protection under the MBTA is needed for red-winged blackbirds in California. If red-wings cannot be shot and shooting stops in autumn in rice, this will also save the lives of an unknown number of post-breeding adult tricolors that are shot by "mistake" as tricolors and red-wings are superficially nearly identical in appearance and flock together during autumn.
4. Better document conditions which result in relatively high reproductive success. Examine patterns in RS to determine whether, on a time-averaged basis, there is relatively higher RS in colonies in some geographic regions or that are established in different nesting substrates. Use these insights to make recommendations for management actions.
5. Study the effects of harvest on populations of fledglings in crèches that persist on nesting substrates until moments before they're harvested to best document effects on birds. In some situations, fledglings persist on the original nesting substrates until moments before the substrates are harvested. Study these colonies and document where the birds go when the harvester shows up and what do they do when they return to the just-harvested field.
6. Take an 'all hands on deck' approach to tricolored blackbird conservation that includes representation by all industries that may be affected by a listing and all systems of protected areas, including the National Wildlife Refuge System, State Wildlife Areas, DOD installations, and private preserves.

7. Work with landowners in foothill and other locations with extensive rangelands where the availability of nesting substrate may be limiting reproduction; add nesting substrates where they are lacking, enhance nesting substrates where they are limiting, and protect nesting substrates where necessary. Fund landowners who want to conserve tricolors but who incur a cost in doing so.
8. Provide supplemental insect foods (meal worms, possibly others) to investigate whether supplemental feeding may increase RS.
9. Provide meal worms or other insects to settling birds at desired locations to see whether the supplemental foods may influence breeding site selection.
10. Focus efforts on regions with a recent history of successful reproduction (e.g., Sierra Nevada foothills) and, where appropriate, seek to create additional breeding sites.
11. Expand monitoring and research into regions which have historically been under-studied (central Sierra foothills, coastal locations) and suggest strategies to sustain or increase reproductive output in these regions. Perhaps fund a volunteer effort by reimbursing volunteers for food and mileage costs for monitoring efforts.
12. Encourage and/or provide monetary incentives to farmers to grow alfalfa, sunflowers, and rice within 3 miles of active tricolored blackbird colonies without insecticides or to delay their use until after the young have fledged and left the area.
13. Investigate the relative abundance of insects in rice paddies under organic culture to that in commercial rice paddies to document whether organic rice provides a better foraging substrate than does commercial rice (as has been suggested by relatively high RS at the Conaway Ranch in Yolo County, where both organic and commercial rice is grown).
14. Provide additional funding and guidance for landowners to provide essential resources for nesting tricolors on private property.
15. Actively maintain all wetlands recently used by breeding tricolors, and especially those in coastal locations, to provide the youthful conditions preferred by nesting birds.
16. Develop and disseminate via the Portal handbooks that illustrate best practices for maintaining wetlands and other nesting substrates for breeding by tricolored blackbirds.
17. Conduct threat assessments of all areas currently used by breeding tricolors and work with local officials to identify these threats and seek ways to reduce or eliminate them.
18. Assess the concentrations of neonicotinoid insecticides in regions with the lowest insect abundances and highest rates of decline in tricolored blackbirds.

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again settled at Lakeport, in November, remaining until March, 1894. The three years spent in California resulted in an excellent series of bird skins. In 1892 Brett began a collection of mammals, with the measurements taken in inches and hundredths, but commenced the use of millimeters in January, 1894, though continuing to measure birds in inches as before. The mammal skulls were numbered and kept separate.

Brett was in 1892 a member of the California Academy of Sciences, the California Zoological Club, and a subscriber to Zoe. He was also in correspondence with the Smithsonian Institution: with Ridgway about the form of cormorant breeding at Clear Lake, which Brett believed to be new; with True about mammals; with Stiles about bird parasites; and I find a letter from Bendire asking for eggs of the White-tailed Kite. All this correspondence was between the years 1891 and 1895.

From California Brett removed to Halifax County, Nova Scotia, and remained there nearly five years; then back to Hastings County, Ontario, and in 1900 to Huns Valley, Manitoba, where collecting ceased after July 14. The field books record 1586 bird skins and 237 mammals collected between 1888 and 1900. In all, Brett collected 297 species of North American birds.

In a letter of November 11, 1910, Brett wrote: "I am on the verge of 74 years. I have no laurels to wear. But my bird life in the suburbs of London, England; then in Flanders, the Belgian Ardennes, and ultimately 40 years in North America, these are glorious years to refer to." Writing in November 3, 1916: "I am writing to let you know that I have reached 80 years and 6 months old, also my bird collections stayed at No. 1587, in Nova Scotia 1905."

I spent a day with Walter Brett in December, 1916, at Trenton, Ontario. He had written, "I will meet you, look out for an old chap with corduroy pants void of all fashion." I found him, as his letters had indicated, the perfect type of an English sportsman-naturalist, interested in wild life and in collecting, but beyond that a keen student of nature. Brett felt that he could no longer care for his collection and it passed into my hands by purchase; there were 1000 bird skins and 135 mammals. The birds were absorbed into my collection, and I have recently given the mammals to the Royal Ontario Museum of Zoology.

Walter Brett died at Bedford, Nova Scotia, September 18, 1917, aged 81 years and 5 months, and was interred at Trenton, Ontario. I am indebted for details of Brett's life to his two sons, both of whom shared their father's interest in natural history, Mr. Richard C. Brett of Steenburg, Ontario, and Mr. Harry W. Brett, of Niagara Falls, New York.

Toronto, Ontario, October 12, 1936.

NESTING DISTRIBUTION OF THE TRI-COLORED RED-WING

WITH MAP

By JOHNSON A. NEFF

Described by the taxonomist as a species of Central or South American origin, the Tri-colored Red-wing (*Agelaius tricolor*) is one of the most interesting of American bird species. In the autumn of 1930 the writer was assigned to the Sacramento Valley district of California to investigate the relationship of blackbirds to the rice industry. During the autumn and winter of 1930-31 general studies in the vicinity of Marysville, Yuba County, occupied the entire period; although a few Tri-colored Red-wings

were collected, the population was very light until late March, 1931, when great numbers of this species returned to the district. As studies continued, their immense numbers and unusual habits aroused keen interest, which was intensified by the field work of each succeeding season.

Perusal of ornithological literature has not satisfied the interest. Many records are old, in fact most of them date back to the days prior to widespread agricultural development in California. Up to 1930, only twenty-six published articles described specific nesting colonies of this species. Only two or three of them give so much as a hint as to the density of population in the days before industrial and agricultural development greatly changed the topography of much of the State. Great gaps appear in the geographic distribution of the species as represented in the literature, and for many of these there seemed no logical reason except that these areas were not sufficiently known by ornithologists.

From the preliminary studies of the species, came a desire to learn something of the present status of the bird. Several questions arose: What has been the effect of the development of California? Has industrial and agricultural development reduced the area favorable to nesting of this species? Has the species proved adaptable to changing conditions? About this time came criticism of the Biological Survey, based largely upon the supposed scarcity of this bird; indeed, it was charged that the species might even then (in 1931) be nearing extinction.

The original plan was to arrange for a complete survey of the nesting range of the species in California during one single nesting season. A start was made upon this, but we speedily learned that Tri-colored Red-wings existed in immense numbers, and that their nesting range covered so great a part of California that such a survey was humanly impossible. Observations continued during the ensuing six-year period covering whatever part of the range the time and funds permitted each nesting season.

ACKNOWLEDGMENTS

The writer greatly appreciates the assistance of a large number of persons who have given aid in this study. Without their assistance in the field the records could not have been gathered. Dr. Joseph Grinnell furnished a bibliography of the species, which has been of great value. Dr. Tracy I. Storer has been a major coöperator, with suggestions as to methods of handling the material and with his critical inspection of the manuscript. Mr. James Moffitt, of the California Academy of Sciences, made valuable suggestions with regard to presentation of material. The continued interest and coöperation of W. C. Jacobsen and H. A. Hunt, of the California State Department of Agriculture, has been invaluable. To the Chief of the Biological Survey and to others in the Washington office of the Bureau, appreciation for interest and assistance is also extended.

HISTORY

Agelaius tricolor was first collected in the vicinity of Santa Barbara by Nuttall in 1836. The original naming of the species is contained in Audubon's folio "Birds of America" (1837, pl. 388); the original description is contained in his "Ornithological Biography" (1839, p. 1).

In 1849, A. L. Heermann arrived on the Pacific Coast; for a time he was attached to the Williamson survey of the Cascade-Sierra Nevada region. Under date of 1853*b* (p. 268) he gave the first nesting record of the species, which is quoted here:

> AGELAIUS TRICOLOR, Aud. This species collects in flocks of thousands in the fall season, and is shot in large numbers for the market. I once found one of their breeding places in the northern part of California, near Shasta city. They had chosen a space of several acres, covered with thickets of alder and willow bushes, in the immediate vicinity of a stream of water. The nests were placed so closely to each other that I could often, without advancing, put my hand in six or eight nests.

. . . When I discovered this breeding place the young were nearly all hatched, and nightly the wolves and foxes came to devour those which had fallen from their nests during the day.

This locality was in Shasta County, apparently on the Cottonwood Creek that is the present boundary between Shasta and Tehama counties, for Heermann wrote of making excursions to such a creek rising in the Coast range; the old mining town of Shasta, 6½ miles west of Redding, is not far from some of the tributaries of this stream. Although Heermann (1853*a*, p. 17) catalogued eggs of the Tri-colored Red-wing in the Academy of Natural Sciences of Philadelphia, the first specimens of eggs in the United States National Museum were collected near Lakeside, San Diego County, on May 4, 1890 (Bendire, 1895, p. 458).

The A. O. U. Check-list of North American Birds (4th ed., 1931, p. 305) gives the range of *Agelaius tricolor* as follows: "Valleys of northwestern Oregon (west of the Cascade Range) south through California (west of the Sierra Nevada) to northwestern Lower California."

The range of the Tri-colored Red-wing extends well into Lower California. A. W. Anthony (Bendire, *op. cit.*, p. 467) reported it as "rather common along the northwest coast, breeding in all fresh-water marshes; and in San Rafael Valley Mr. L. Belding found a large colony nesting in the tules, May, 1885." Since the occurrence of the species in Mexico is incidental to the object of the present paper, it is not covered in detail here, although several other records for that area have been published since 1885.

Oregon is included in the range of the species on the basis of the following records: Bendire (*op. cit.*, p. 456) wrote: "Here [near Klamath Falls] it was first met with by Dr. J. S. Newberry, and later by Dr. J. C. Merrill, United States Army, who noticed a few among the common Red-winged Blackbirds there but did not find it breeding. I failed to observe it while stationed at Fort Klamath, and it is probably uncommon." Woodcock (1902, p. 64) lists it as having been observed "near Portland" by H. T. Bohlman, and wrote: "I have in my collection three specimens, one male and two females, which I think are referable to this species;" he did not list it as a breeding species. Numbers of qualified ornithologists have worked in Oregon in the interim; none listed the species in Oregon, and most ornithologists were ready to call these early identifications erroneous; there was no specimen in any museum or collection; the fate of Woodcock's supposed specimens is unknown.

The range in California is given by Grinnell in 1915 (p. 104) as follows:

Common resident locally in the interior valleys west of the Sierran divide and south through the San Diegan district. Recorded north to Shasta County, east to Lake Tahoe and near Weldon, Kern County . . ., and west to the coast district of central and southern California. The San Joaquin Valley seems to be now the metropolis of the species. Not recorded east of the Sierran divide, save as breeding at Lake Tahoe . . ., nor in northwestern California north of Marin County, where recorded only as a straggler . . . Westernmost breeding station: Sargents, Santa Clara County. . . .

Grinnell and Wythe (1927, p. 105) record the species as an irregular resident or straggler in the San Francisco Bay region, and list nesting colonies as follows: Point Reyes, Mowry and near Irvington, and Sargent. Willett (1933, p. 153) describes the species as "formerly common resident of lowlands [coastal southern California], breeding locally in tule marshes from the latter part of April through May. . . Now rare throughout former ranges in southern California, excepting in some sections of San Diego County. According to L. M. Huey and J. B. Dixon (MS), still nests plentifully, though irregularly, at San Luis Rey, Lake Hodges, Sweetwater, and Lakeside." By way of contrast, Bendire (*loc. cit.*) quotes a letter from F. Stephens concerning Los Angeles and Orange counties prior to 1895: "In summer it is somewhat rarer, but several colonies are known to me to breed in tule marshes from sea level up to an altitude of 1,500 feet."

PUBLISHED NESTING RECORDS

The following table summarizes the entire record of the species insofar as definite nesting colonies are described in the literature.

Date of Observation	Location	Habitat	Observer and Citation	Remarks
Prior to 1853			A. L. Heermann (1853*a*)	Sets of eggs collected in California
Prior to 1853	Near Shasta City	Thickets of alders and willows near stream	A. L. Heermann (1853*b*)	(See text)
1875	Saticoy	Nettles	J. G. Cooper (1880)	Hundreds
1872-3; May 22	Near Saticoy		J. G. Cooper (1875)	No statement of numbers
June 21, 1872	Santa Clara Valley (Ventura County)	Patch of nettles and briars in a pasture	H. W. Henshaw (1876)	Two hundred pairs
May 10, 1879	Near Stockton	Tules	L. Belding (1890)	An immense colony; nests averaged one to each square yard
May 16, 1883	Bernardino River		F. E. Blaisdell (Belding 1890)	
	San Bernardino		F. Stephens (Bendire, 1895)	Breeds in the valley
1884	Santa Cruz County		J. Skirm (1884)	Listed as a breeding species
May 4, 1890	Near Lakeside		(Bendire, 1895)	Collection of sets of eggs
Before 1895	Los Angeles County		F. Stephens (Bendire, 1895)	Several colonies
May 26, 1895	Near Sargent	Tule patch	C. Barlow (1900)	Small colony
June 12, 1896	On shores of Lake Tahoe		R. H. Beck (Barlow, 1901)	
May 8, 1897	Near Compton		G. F. Morcom (Grinnell, 1898)	
1900, late April	Near northern Madera County line	In tules, a patch 30 yards across at an artesian well	J. Mailliard (1900)	A large colony; hundreds of birds
May 9 to 21, 1905	Noted at various points from Stockton to Porterville, breeding		M. S. Ray (1906)	
Prior to 1907, April 30 to May 26	San Diego County, Escondido and San Pasqual valleys, Bernarda Rancho		C. S. Sharp (1907)	A district list; apparently several colonies recorded in this area
April 30, 1907	30 miles southwest of Fresno	In nettles, willows, foxtail grass, and on bare ground	J. G. Tyler (1907)	Hundreds in two localities about 200 yards apart
June 8, 1907	Near Letcher, Fresno County	Clump of rank tule	J. G. Tyler (1907)	About 200 nests
May 20 to June 16, 1907	Buena Vista Lake		C. B. Linton (1908)	Breeding colony
June 7, 1912	Buena Vista Lake		Lamb and Howell (1913)	Hordes
April 14, 1914	Rancho Dos Rios, Stanislaus County	Tules	J. Mailliard (1914)	Nesting area of several acres
1916	Near Los Banos	Tule and cattail	W. L. Dawson (1921)	Large numbers
May 27-June 13, 1916	Near Dos Palos	Swamps, tule and cattail	W. L. Dawson (1919)	Estimated 20,000 pairs
May 20, 1917; May 4, 1918; May 4, 1919	Near San Francisco (Newark, Alameda County)	Common nettles	B. W. Evermann (1919)	200-300 nests
May 7, 1919	2 miles southwest of La Grange	Cattails in dredger pits	Grinnell and Storer (1924)	About 25 pairs
April 2, 1921	Walker Basin, Kern County	Old dead tule patch	A. J. vanRossem, Dickey and vanRossem (1922)	About 20 pairs
April 17 to 20, 1926	Short distances north of Point Reyes	Dense growth of raspberry bushes	E. J. Booth (1926)	
May 20, 1931	12 miles northeast of Marysville	Willows and cattails	T. T. McCabe (1932)	
May 16, 1932	Near Anderson, Shasta County	Tule and cattails	Taylor and Neff (Neff, 1934)	(See text)
May 22, 1933	Near Glenburn, Shasta County	Tangle of *Rubus*, *Prunus*, and *Rosa*, on river bank	Olsen and Neff (Neff, 1934)	(See text)
June 13-16, 1933	26 miles north of Klamath Falls, Oregon	Nettle (*Urtica*)	Richardson and Neff (Neff, 1933)	(See text)
1933	Lakeside, San Diego County		Huey and Dixon (Willett, 1933)	Large number

No doubt local ornithologists and oologists have many records of the nesting of this species that are not available to the writer. One such is an extension of the recorded range. Prior to 1930, Jack Baker, Santa Rosa taxidermist, and Gurney Wells, found Tri-colored Red-wings nesting at Bodega Head, Sonoma County. Baker estimated there were about 1000 birds in the colony. Eggs and birds were collected; the writer has examined one of the specimens mounted in the collection of Agricultural Commissioner O. E. Bremner at Santa Rosa. This is at present the northwesternmost nesting record for the species.

Beck's record of nesting at Lake Tahoe, reported by Barlow (1901, p. 168) has been questioned. On April 7, 1936, I discussed this matter with Mr. Beck. While naturally he cannot recall the actual happenings of forty years ago, he sees no reason for questioning his record. Prior to 1896 he had collected extensively in the lowlands of California where this species was abundant. Following is the journal entry copied from Mr. Beck's original field diary; Tallac is the only locality mentioned on this date: "6-14-96. Lake Tahoe. Tricolored Blackbird. 2/5. In willows 1 ft. above water; 2 ft. of water. Nest mud bottom. Evidently last year on sides and top with lining of dry grass."

SIX SEASONS OF STUDY

Estimates of population are notoriously inaccurate, and are subject to wide variations. Dawson (1921) wrote of the ease of underestimating the number of Tri-colored Red-wings in a cattail or tule marsh; he described having counted from sixteen to thirty-two nests from one stand in a thick marsh. Heermann wrote of being able to put his hand into six or eight nests from one position. Belding (1890, p. 122) stated that in one colony the nests averaged one to each square yard. Taylor and Miller (Taylor, MS) counted the nests in a strip of cattails containing 1200 square feet; the occupied nests averaged one to each eight square feet.

The writer has noted almost every possible variation in density of population. Twelve nests were observed in one small willow, and thirty-six were counted in one clump of about four tall willows growing from the same root. In cattails, nests have been noted at least as numerous as one to each three square feet; from one stand in thick cattails, without moving the feet except to rotate, we counted from sixteen to thirty-six nests; the average of many counts ran well over twenty. A count made in a marginal colony averaged one nest to each nine square feet. In another colony sample counts, in a number of ten-foot squares, ranged from sixteen to thirty-four nests.

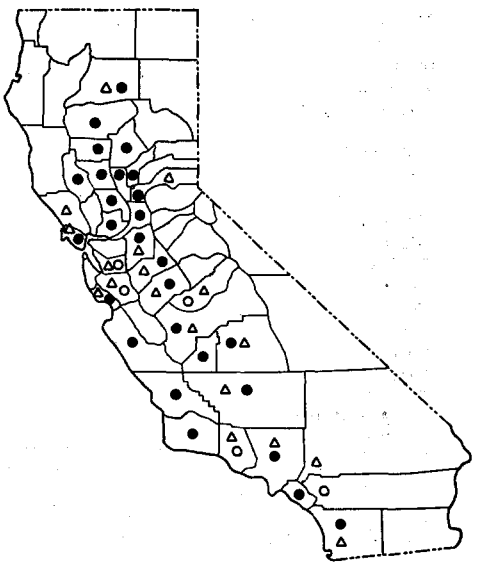

Fig. 21. Nesting range of Tri-colored Red-wing, by counties, in California. Triangles indicate nesting records from published sources prior to 1931; solid spots indicate distribution, 1931-1936, as shown in this report; circles indicate birds observed in nesting season, 1931-1936, but nesting site not found.

In the observations reported here several methods of arriving at population numbers have been used. The active population of various colonies has been checked again and again. Flight-line counts have been made at certain colonies, counting the birds flying in or out across a base line for

five-minute periods; checking the distances from base line to feeding ground or nesting site, and the probable time required for each trip, gave some idea of numbers. When time and terrain permit, the colony site can be stepped off, or estimated area recorded; sample counts then permit a reasonable estimate of numbers.

In my work a combination of all methods has been utilized in order to arrive at reasonable estimates. One common method was to walk into the cattails of a colony at random, then to stop, set the feet together, and turn around, counting each nest that could be reached. The average-sized man can hardly count the nests on more than eighty square feet by this method. The average of a large number of such counts in various marsh colonies has been close to twenty nests, or one to each four square feet. For the sake of conservatism, in many instances the estimated nesting population has been obtained by using the arbitrary figure of *one nest to each ten square feet*, although in many of the localities common sense told the observer that the nests were far closer together. Estimates are given in round figures, for the best that can be expected is a general idea of relative numbers.

Estimated Nesting Population of *Agelaius tricolor*
(Figures represent thousands of nests)

County	1931	1932	1933	1934	1935	1936
Butte (California)		28	106	32	3	4
Colusa		32	16	37	3	5
Fresno						.1
Glenn		68	61	282	4	4.5
Kern					2	.5
Kings		2				
Lake						.02
Los Angeles						.5
Merced		50	58	2	37	10
Monterey		4				2
Orange						.25
Placer			1			1.5
Sacramento		121	101	80	1	15.0
San Diego		3			.1	2.25
San Joaquin					.1	3.75
Santa Barbara						.3
Santa Cruz		.5				
Shasta		18	1			
Solano		.006				
Stanislaus		12			8	12.5
Sutter		10	13	6	1	3
Tehama						.75
Tulare					2	
Yolo	10	38	3	2	10	2
Yuba	113	2	7	50	5	5
Klamath (Oregon)	6		.05			
Annual totals	123	388.5	367.	491.	67.2	63.4
Grand total, 1,500,100.						

The following tables summarize the nesting colonies observed each season for the last six years, with comment on personnel involved in the search, and the area covered. In the data covering annual surveys, estimates are in round figures of thousands of nests.

Approximate Man Days Expended in Studies

County	1931	1932	1933	1934	1935	1936
Alameda (California)				2	2	1
Butte	3	3	4	2	2	2
Calaveras					1	
Colusa	3	3	3	2	2	1
Contra Costa		1				
Eldorado		1	1	1		

County	1931	1932	1933	1934	1935	1936
Fresno		1	1	1	1	2
Glenn	3	6	10	45	2	2
Kern		3	1	1	2	4
Kings		1	1	1		1
Lake						1
Lassen	1					
Los Angeles		2	1	1	1	2
Madera		1	1	1	1	2
Merced		1	30	3	5	4
Modoc	2	1	1			
Monterey		2	1	3	3	2
Napa		1				1
Orange		1	1	1	1	2
Placer		1	1	1	1	2
Riverside			1	1		15
Sacramento	3	5	3	3	2	5
San Benito			1	1	3	2
San Bernardino						2
San Diego		4	2	1	2	3
San Joaquin		2	2	2	3	2
San Luis Obispo		1	1	10	3	2
Santa Barbara		1	1	10	3	2
Santa Clara		1	1	1	4	2
Santa Cruz		2	1	1	3	1
Shasta	1	3	2			1
Siskiyou	2		1			
Solano		1				1
Stanislaus		5	1	1	5	2
Sutter	3	2	2	1	1	1
Tehama	2	3	2			1
Tulare		1	1	1	1	1
Ventura				1	1	1
Yolo	60	3	3	2	2	2
Yuba	60	60	60	60	60	2
Jackson (Oregon)	2		3			
Klamath (Oregon)	5		4			

In the table of man days in the surveys, the data are approximate and are designed merely to give some idea of the time expended. In most instances the entire time indicated was not spent directly in search for colonies. Entries of "one day" often mean merely driving through a county in routine business; entries of from 5 to 60 days do not mean that all this period was expended in direct search for colonies. Indeed the only definite and specific searches for colonies are included in the entries of two, three, and four days.

The table of approximate man days clearly emphasizes that only a partial coverage of the range of the species has been attained.

1931

Date	Locality	County	Habitat General	Habitat Specific	Estimated number of nests
May 31	5 mi. E Woodland	Yolo	Reservoir	Cattails	4,000
May 31	5 mi. E Woodland	Yolo	Canal	Cattails	3,000
May 31	5 mi. E Woodland	Yolo	Marsh	Cattails	3,000
April 12	12 mi. NE Marysville	Yuba	Slough	Cattails, tules	3,000
April 15	2 mi. W Hammonton	Yuba	Dredger pits	Cattails	10,000
April 23	12 mi. NE Marysville	Yuba	Slough	Cattails, tules	30,000
April 24	10 mi. NE Marysville	Yuba	Slough	Cattails, tules	10,000
May 4	12 mi. NE Marysville	Yuba	Slough	Willows, cattails, tules	50,000
May 26	9 mi. NE Marysville	Yuba	Canal	Cattails	2,000
June 1	1 mi. NW Hallwood	Yuba	Slough	Cattails, tules	3,000
June 17	8 mi. NE Marysville	Yuba	Slough	Cattails	3,000
June 20	14 mi. NE Marysville	Yuba	Dry Creek	Cattails, willows	2,000

Field work in the nesting season of 1931 centered in the Hallwood and Cordua Irrigation districts northeast of Marysville, Yuba County, and on the Conoway Ranch, Yolo County. Trips were made to others of the seven rice-growing counties, and, in the nesting period, birds were noted in colonies in Butte, Sutter, Colusa, and Glenn counties, but no effort was made to estimate populations.

On May 30 and 31, 1931, Dr. Storer and a group from the Museum of Vertebrate Zoology visited Glenn County; two colonies were found near Glenn and a third near Princeton. A total of 2150 nestlings was banded in the three colonies. Later, information was received as to the location of a colony in Sacramento County, but no inspection was made until the next season.

1932

Date	Locality	County	Habitat General	Habitat Specific	Estimated number of nests
May 10	10 mi. W Biggs	Butte	Canal	Cattails	75
May 10	10 mi. W Biggs	Butte	Slough	Cattails	500
May 10	8 mi. W Biggs	Butte	Marsh	Cattails	200
May 10	4 mi. N Biggs	Butte	Marsh	Cattails	2,500
May 15	NE Butte City	Butte	Marsh, slough	Cattails	5,000 (3 localities)
June 17	10 mi. W Gridley	Butte	Marsh	Cattails	300
June 17	9 mi. W Gridley	Butte	Marsh	Cattails	2,000
June 17	4 mi. W Biggs	Butte	Marsh	Cattails	3,000
June 17	3 mi. N Biggs	Butte	Marsh	Cattails	1,000
June 17	E Butte City	Butte	Marsh, slough	Cattails	9,000 (4 localities)
June 17	E Butte City	Butte	Marsh, slough	Cattails	4,500 (3 localities)
June 24	NE Butte City	Butte	Marsh, slough	Cattails	100
June 24	NE Butte City	Butte	Marsh, slough	Cattails	500
May 12	SW Princeton	Colusa	Slough	Cattails	5,000
May 12	5 mi. NE Maxwell	Colusa	Slough	Cattails	75
May 12	5 mi. NE Maxwell	Colusa	Slough	Cattails	1,000
May 12	4 mi. NE Williams	Colusa	Marsh	Cattails	20,000
June 13	5 mi. SW Grimes	Colusa	Slough	Cattails	250
June 13	9 mi. SW Colusa	Colusa	Marsh	Cattails	750
June 20	3 mi. SW Maxwell	Colusa	Marsh	Cattails	1,000
June 20	2 mi. SW Maxwell	Colusa	Canal	Cattails	200
June 20	1 mi. W Maxwell	Colusa	Marsh	Cattails	500
June 23	4 mi. E Delevan	Colusa	Canal	Cattails	2,500
June 24	15 mi. W Biggs	Colusa	Marsh	Cattails	400
May 10	8 mi.SE Willows	Glenn	Marsh	Cattails	15,000
May 10	5 mi. E Butte City	Glenn	Slough	Cattails, tules	5,000
May 11	6 mi. SE Willows	Glenn		Willows	3,000
May 11	2 mi. W Sidds Landing	Glenn	Ditch	Cattails, tules	5,000
May 11	3 mi. S Fairview School	Glenn	Marsh	Cattails, tules	3,000
May 11	2 mi. E Fairview School	Glenn	Marsh	Cattails, tules	1,000
May 12	4 mi. E Norman	Glenn	Marsh	Cattails, tules	15,000
May 21	1 mi. S Fairview School	Glenn	Slough	Cattails, tules, sedges	8,000
June 21	3 mi. SE Fairview School	Glenn	Marsh	Cattails	1,000
June 21	3 mi. E Fairview School	Glenn	Marsh	Cattails	2,500
June 24	7 mi. NE Butte City	Glenn	Marsh	Cattails, tules	5,000
June 24	9 mi. NE Butte City	Glenn	Marsh	Cattails, tules	5,000
May 16	4 mi SW Corcoran	Kings	Canal	Tules	2,000
May 14	15 mi. NW Merced	Merced		Thistles	50,000
May 4	4½ mi. NW Salinas	Monterey	Slough	Cattails, tules	750
May 4	San Juan Grade	Monterey	Marsh	Cattails	400
May 21	3½ mi. NE Castroville	Monterey	Slough	Tules	3,000

Date	Locality	County	Habitat General	Habitat Specific	Estimated number of nests
April 25	18 mi. E Sacramento	Sacramento	Reservoir	Cattails, tules	120,000
May 5	Near Folsom	Sacramento	Reservoir	Cattails	1,000
May 18	Lakeside Lake	San Diego	Lake	Tules	200
May 19	1 mi. W San Luis Rey	San Diego	Lake	Tules	1,000
May 27	San Dieguito Reservoir	San Diego	Reservoir	Tules, cattails	200
May 27	2 mi. NE San Luis Rey	San Diego	Estuary	Tules, cattails	1,200
April 30	5 mi. W Watsonville	Santa Cruz	Dry Marsh	Blackberries, nettles, cattails	500
May 16	½ mi. S Anderson	Shasta	Marsh	Cattails, tules, sedges	10,000
May 18	5 mi. SE Anderson	Shasta	Creek	Cattails, tules	5,000
May 18	5 mi. NE Cottonwood	Shasta	Marsh	Cattails, tules	2,000
June 14	6 mi. S Redding	Shasta	Marsh	Cattails, tules	1,000
May 6	2 mi. W Birds Landing	Solano	Marsh	Cattails	6
May 14	3 mi. E Patterson	Stanislaus	Ditch	Tules	2,500
May 14	Near preceding colony	Stanislaus	Ditch	Cattails, tules	10,000
May 5	20 mi. N Sacramento	Sutter	Marsh	Cattails, tules, thistles	5,000
May 21	5 mi. N Robbins	Sutter	Marsh	Cattails, tules	5,000
April 9	Northern County Line	Yolo	Canal	Cattails	5,000
May 21	6 mi. W Sacramento	Yolo	Levee	Thistles, mustard	5,000
May 24	Near Davis	Yolo	Field	Thistles	28,000
May 20	12 mi. NE Marysville	Yuba	Marsh	Cattails, tules	100
June 6	15 mi. S Marysville	Yuba	Marsh	Cattails, tules	2,000

This was the season when the attempt was made to cover the entire range of the species. The writer surveyed in rather detailed manner the valley from Sacramento north to Redding and east to Glenburn and McArthur; W. P. Taylor, A. H. Miller, W. C. Jacobsen, A. E. Morrison, H. A. Crane, R. B. MacMath, B. F. Stroup, C. E. Berry, W. G. Duncan, and others, assisted in parts of this large area. T. I. Storer investigated a colony near Davis.

Jacobsen, C. Olsen, and H. A. Hunt studied colonies in Monterey County. Jacobsen and Ira N. Gabrielson noted several colonies in the San Joaquin Valley counties, and in San Diego County visited other colonies found by S. E. Piper and J. C. LaForce. Piper also discovered a colony in Santa Cruz County.

Reference to the table of estimated man days spent in the survey clearly indicates the incompleteness of the survey, and it must be emphasized here that only two areas were surveyed in any detail: San Diego County, and the area from Sacramento and Davis to Redding. Even in these regions it was impossible to make a complete survey of all possible localities. Many of the colonies outside these two areas were discovered as our cooperators drove up or down State in the performance of routine duties.

Besides the colonies listed, bands of adult Tri-colors were noted at many points in the height of the breeding season, on occasions when it was not possible to search out the nesting sites. Piper found adult birds at Lake Hodges, at San Luis Rey Mission, in the dredger workings in the Otay River valley, and on the Santa Margarita Ranch, in San Diego County. He also noted several flying bands in the vicinity of Watsonville, Santa Cruz County, and in July, 1932, observed immature birds in the Buena Vista Lake basin, Kern County, and near Los Banos, Merced County. In none of these instances were nesting sites found.

In the Sacramento Valley, flying or feeding bands were seen at various points where no breeding colonies were noted. Of chief interest was a group of adults feeding in a field near Glenburn, eastern Shasta County. It is estimated that unattached bands observed during the field work totaled considerably more than 50,000 birds.

1933

Date	Locality	County	Habitat General	Habitat Specific	Estimated number of nests
May 10	West of Gridley	Butte	Marsh	Cattails	2,500
May 18	Near Shippee Station	Butte	Reservoir	Cattails	50
May 18	6 mi. W Biggs	Butte	Ditch	Cattails	1,200
May 18	5 mi. N Biggs	Butte	Canal	Cattails	2,500
May 24	8 mi. N Oroville	Butte	Marsh	Cattails	200
May 20	NE Butte City	Butte and Glenn	Slough	Cattails, tules	150,000
April 28	Colusa Outing Club	Colusa	Marsh	Cattails	10,000
May 4	4 mi. S Maxwell	Colusa	Canal	Cattails	4,000
May 9	1 mi. SW Cortena	Colusa	Canal	Cattails	2,000
April 21	E of Willows	Glenn	Slough	Cattails	2,500
May 3	E of Willows	Glenn	Slough	Cattails, willows	500
May 4	6 mi. SE Willows	Glenn	Willows		5,000
May 10	2 mi. W Glenn	Glenn	Marsh	Cattails	1,500
May 10	5 mi. SW Glenn	Glenn	Marsh	Cattails	2,000
June 14	26 mi. N Klamath Falls	Klamath, Oregon	Levee	Nettles	50
April 23	8 mi. N Atwater	Merced	Marsh	Cattails	15,000
April 26	3 mi. SW Merced	Merced	Marsh	Cattails	100
April 27	N of Merced	Merced	Marsh	Cattails	250
April 27	Near Hoff Station	Merced	Marsh	Cattails	1,000
April 28	4 mi. SW Livingston	Merced	Marsh	Cattails	1,000
May 2	3 mi. NE Snelling	Merced	Slough	Cattails	2,500
May 2	2 mi. S Snelling	Merced	Marsh	Cattails	1,500
May 2	1 mi. E Snelling	Merced	Marsh	Cattails	500
May 4	2 mi. S Livingston	Merced	Slough	Cattails	4,000
May 4	8 mi. SW Livingston	Merced	Marsh	Cattails, willows	6,000
May 9	Near Merced	Merced	Canal	Cattails	2,500
May 10	Near Merced	Merced	Creek	Cattails	3,000
May 10	4 mi. NE Merced	Merced	Creek	Cattails, willows	5,000
May 12	15 mi. S Merced	Merced	Marsh	Cattails	7,500
May 12	Near El Nido	Merced	Reservoir	Cattails	300
May 19	SW Merced	Merced	Canal	Cattails	1,500
May 26	5 mi. NE Snelling	Merced	Creek	Willows	1,500
June 5	Near Delhi	Merced	Marsh	Cattails	2,000
June 5	4 mi. S Turlock	Merced	Marsh	Cattails	3,000
May 26	Lincoln	Placer	Canal	Cattails	1,000
May 28	Near Folsom	Sacramento	Marsh	Cattails	1,000
June 3	18 mi. E Sacramento	Sacramento	Reservoir	Cattails, tules	100,000
May 22	Near Glenburn	Shasta	Riverbank	Roses, wild plums, blackberries	100
June 30	SE Anderson	Shasta	Creek	Cattails	1,000
May 19	Near Meridian	Sutter	Lake	Cattails	500
May 19	N of Robbins	Sutter	Marsh	Cattails	5,000
May 26	20 mi. N Sacramento	Sutter	Marsh	Cattails	7,500
June 1	6 mi. SW Sacramento	Yolo	Marsh	Cattails	3,000
April 28	12 mi. NE Marysville	Yuba	Slough	Cattails, tules	2,500
May 4	12 mi. NE Marysville	Yuba	Marsh	Cattails	5,000

In 1933 there was no attempt at a statewide search. Piper casually noted the presence of the birds in San Diego County. M. R. Gross, temporarily employed as an assistant, in cooperation with Piper, made a survey of Merced County, east of the San Joaquin River. The writer spent about two weeks in the Sacramento Valley area from Sacramento north to Redding and east to McArthur. MacMath covered Yuba, Sutter, and parts of Butte and Colusa counties. Other surveys were made only in Klamath County, Oregon, and in parts of Jackson County, Oregon.

The first nesting colony in Oregon was found (Neff, 1933, p. 234), and the first nesting records east of the Sierran summit in northeastern California also were made (Neff, 1934, p. 42).

Flocks of Tri-colors were seen in a number of places where no nesting site was observed. Small groups were noted in two places near Klamath Falls, Oregon, on June 14 and 16, 1933. Other bands were seen in the vicinity of McArthur and Glenburn,

Shasta County, California, on May 23; these were not trailed to their nesting grounds. Other small flocks were noted near Anderson in the same county.

In the vicinity of Richvale, Butte County, large numbers of the birds were seen flying northeastward from the village; no nesting site was discovered. Flying bands of Tri-colors were noted in the height of the nesting season at several points along the western edge of the Sierran foothills. There is no doubt that if time had permitted, a few colonies could have been found in the foothill districts of Eldorado, Amador, Calaveras, Tuolumne, and Mariposa counties. C. W. Feltes, of Modesto, reports in a letter dated March 24, 1936, that he observed a colony near La Grange, on land owned by the La Grange Gold Dredging Company; the location was in tules growing in a dredger cut.

John Cushing, of San Francisco, wrote under date of October 21, 1936, that on May 14, 1933, he found a breeding colony of Tri-colors at the mouth of White Gulch, Tomales Point, Marin County: "the parents were quite tame and the females sat in anxious groups at one end of the thicket while I searched the other."

1934

Date	Locality	County	Habitat General	Habitat Specific	Estimated number of nests
May 23	Butte Creek	Butte	Sloughs	Cattails	4,000
May 23	SW Richvale	Butte	Canal	Cattails	6,000
May 23	SW Richvale	Butte	Slough	Cattails	20,000
May 23	4 mi. N Biggs	Butte	Marsh	Cattails	300
May 23	2 mi. N Biggs	Butte	Marsh	Cattails	1,000
May 23	1 mi. N Biggs	Butte	Marsh	Cattails	1,000
June 6	5 mi. W Colusa	Colusa	Marsh	Cattails	15,000
June 6	5 mi. W Colusa	Colusa	Marsh	Cattails	7,500
June 6	3 mi. SE Maxwell	Colusa	Marsh	Cattails	7,500
June 6	7 mi. NE Maxwell	Colusa	Slough	Cattails	7,500
April 25	2 mi. S Willows	Glenn	Ditch	Cattails	250
April 25	3 mi. SE Willows	Glenn	Canal	Cattails	2,000
May 9	8 mi. NE Butte City	Glenn	Slough	Cattails	6,000
May 9	8 mi. NE Butte City	Glenn	Marsh	Cattails	2,500
May 10	3 mi. S Willows	Glenn	Ditch	Cattails	1,000
May 10	1 mi. W Norman	Glenn	Marsh	Cattails	1,000
May 10	1 mi. E Norman	Glenn	Canal	Cattails	1,000
May 10	4 mi. E Norman	Glenn	Marsh	Cattails, tules	200,000
May 10	6 mi. SE Willows	Glenn	Marsh	Cattails	750
May 10	6 mi. SE Willows	Glenn	Marsh	Cattails	500
May 10	6 mi. SE Willows	Glenn	Marsh	Cattails	1,000
May 15	3 mi. W Glenn	Glenn	Marsh	Cattails	2,500
May 16	2 mi. E Norman	Glenn	Canal	Cattails	500
May 16	4 mi. SE Willows	Glenn	Slough	Cattails	30,000
May 16	8 mi. NE Norman	Glenn	Canal	Cattails	750
May 21	4 mi. E Willows	Glenn	Sloughs	Cattails, willows	200
May 21	7 mi. SE Willows	Glenn	Slough	Cattails	1,500
May 22	4 mi. NW Princeton	Glenn	Marsh	Cattails, tules	3,000
May 22	2 mi. NW Princeton	Glenn	Sloughs	Cattails, tules	400
May 22	2 mi. NW Princeton	Glenn	Sloughs	Cattails, tules	7,500
May 30	3 mi. NE Norman	Glenn	Creek	Cattails	750
June 1	3 mi. NW Princeton	Glenn	Canal	Cattails	600
June 1	8 mi. NE Norman	Glenn	Canal	Cattails	1,250
June 2	3 mi. S Willows	Glenn	Marsh	Cattails	1,000
June 4	3 mi. SW Willows	Glenn	Marsh	Cattails	10,000
June 5	4 mi. SW Willows	Glenn	Marsh	Cattails	5,000
June 5	2 mi. E Norman	Glenn	Creek	Cattails	1,000
June 11	Merced	Merced	Canal	Cattails	1,000
June 12	Near El Nido	Merced	Reservoir	Cattails	500
May 10	17 mi. E Sacramento	Sacramento	Reservoir	Cattails	75,000
May 15	18 mi. N Sacramento	Sacramento	Marsh	Cattails	5,000
May 24	Near Meridian	Sutter	Lake	Cattails, tules	2,500
May 24	N of Sutter Causeway	Sutter	Marsh	Cattails	3,500
June 4	6 mi. W Sacramento	Yolo	Marsh	Cattails	2,000
May 1	10 mi. S Marysville	Yuba	Marsh	Cattails	35,000
May 15	2 mi. W Hammonton	Yuba	Pits	Cattails	15,000

The season of 1934 was a busy one, and the only survey was made by the writer. The area covered was the seven-county Sacramento Valley rice district; the Glenn County rice area, comprising about one-fourth of the County, was surveyed in greatest detail. On July 11, 1934, a large population of birds was observed near the lake in Los Osis Valley, a few miles southwest of San Luis Obispo. Great numbers of young birds were scattered among the feeding flocks, but apparently all had left the nesting area in the heavy tules surrounding the lake, for no flight was noted into them. No estimate was made of the size of the band, but the age of many of the youngsters made it certain that they were hatched in this place and could not have flown in from any other known marsh.

The presence of the birds in several San Joaquin Valley counties, and in San Diego County, was noted, but time did not permit close inspection and the making of estimates. Feltes reported that the dredger cut near La Grange was again occupied by Tri-colors in 1934.

1935

Date	Locality	County	Habitat General	Habitat Specific	Estimated number of nests
May 21	E Butte City	Butte	Slough	Cattails	500
May 21	SE Richvale	Butte	Slough	Cattails	1,000
May 21	E Riceton Station	Butte	Marsh	Cattails	250
May 21	SW Richvale	Butte	Marsh	Cattails	1,000
May 22	E Willows	Glenn	Slough	Cattails	1,000
May 22	SW Glenn	Glenn	Marsh	Cattails	2,500
May 22	W Glenn	Glenn	Marsh	Cattails	400
May 22	W Glenn	Glenn	Marsh	Cattails	200
April 30	Near Wasco	Kern	Reservoir	Cattails	1,500
April 25	S of Livingston	Merced	Canal	Cattails	150
May 27	4 mi. N Merced	Merced	Canal	Cattails	1,250
May 28	2 mi. S Snelling	Merced	Marsh	Cattails	5,000
May 28	1 mi. S Snelling	Merced	Slough	Cattails	600
May 28	8 mi. N Atwater	Merced	Marsh	Cattails	1,000
May 28	Near Hoff Station	Merced	Marsh	Cattails	400
May 28	Near Merced	Merced	Canal	Cattails	1,500
May 28	Near El Nido	Merced	Reservoir	Cattails	1,000
May 28	Near Livingston	Merced	Canal	Cattails	1,000
May 28	Near Livingston	Merced	Slough	Cattails, willows	1,500
May 28	S of Livingston	Merced	Canal	Cattails	4,000
May 28	S of Livingston	Merced	Marsh	Cattails	3,000
May 28	S of Livingston	Merced	Marsh	Cattails	1,500
May 28	S of Livingston	Merced	Marsh	Cattails	5,000
May 28	NE Los Banos	Merced	Marsh	Cattails	2,500 (3 localities)
May 28	San Joaquin River bridge	Merced	Canal, river bank	Cattails, willows	7,500
May 26	Nimbus Ranch	Sacramento	Reservoir	Cattails	1,000
May 12	Near San Clemente	San Diego	Swamp	Cattails	100
May 17	Near Escalon	San Joaquin	Marsh	Cattails	150
May 15	W Mt. View School	Stanislaus	Marsh	Cattails	2,500
May 15	Near Jennings School	Stanislaus	Canal	Cattails	5,000
May 17	E Oakdale	Stanislaus	Slough	Cattails	250
May 20	W Crows Landing	Stanislaus	Canal	Cattails	750
May 20	Sutter Basin	Sutter	Canal	Cattails	500
May 20	Near Meridian	Sutter	Canal	Cattails	750
May 13	Near Pixley	Tulare	Marsh	Cattails	1,500
May 24	S Elkhorn	Yolo	Levee	Thistles	5,000
June 18	SW Verona	Yolo	Pothole	Cattails	5,000
May 20	NE Marysville	Yuba	Slough	Cattails, tules	2,000
May 21	S Marysville	Yuba	Slough	Cattails	3,000

All of the observations of 1935 were made by the writer, except those in Stanislaus County which were made by Gross. Little time was spent in the search. Parts of five days were spent in the Sacramento Valley rice fields, and two days in Merced County in actual search for colonies. Other colonies were found while I was driving through the State. On May 10, Tri-colors were noted along the Santa Clara River valley near Piru.

Particular attention was paid to the eastern part of Merced County in order to compare the situation there with that recorded by Gross in 1933. Many other bands of birds were observed flying in the area between the Los Banos-Gustine Highway and the San Joaquin River. In mid-July, once again, young birds just out of the nest were noted at the lake in Los Osis Valley near San Luis Obispo.

1936

Date	Locality	County	Habitat General	Habitat Specific	Estimated number of nests
May 27	Near Biggs	Butte	Canal	Cattails	1,000
May 27	Near Butte City	Butte	Slough	Cattails	3,000
May 28	Near Williams	Colusa	Marsh	Cattails	3,000
May 28	Near Williams	Colusa	Marsh	Cattails	2,000
June 6	Near Firebaugh	Fresno	Canal	Cattails	100 (see notes)
May 27	Near Butte City	Glenn	Marsh	Cattails	1,000
May 27	Near Artois	Glenn	Creek	Willows	1,000
May 28	Near Willows	Glenn	Marsh	Cattails	2,500
May 6	Near Tupman	Kern	Slough	Cattails, tules	500
May 6	Connors Station	Kern	Slough	Cattails	50
May 29	Near Lakeport	Lake	Marsh	Cattails	50
May 17	1½ mi. E Kemp Station	Los Angeles	River jungles	Cattails, willows	500
June 5	Near Merced	Merced	Canal	Cattails	2,000
June 6	Near Dos Palos Junction	Merced	Riverbank jungles	Cattails, willows	1,000
June 6	Lucerne Ranch	Merced	Marsh	Cattails	2,000
June 7	Near Snelling	Merced	Slough	Cattails	2,000
June 7	Arundel Station	Merced	Marsh	Cattails	1,500
June 7	Near Merced	Merced	Canal	Cattails	1,000
May 20	Near Salinas	Monterey	Marsh	Cattails, tules	2,000
May 10	Near Laguna Beach	Orange	Swamp	Cattails	250
May 26	Near Lincoln	Placer	Canal	Cattails	1,500
May 31	Near Folsom	Sacramento	Reservoir	Cattails	3,000
May 31	Near White Rock Station	Sacramento	Reservoir	Cattails	5,000
May 31	Near Ney School	Sacramento	Reservoir	Cattails	7,500
May 15	Near San Pasqual	San Diego	Marsh	Cattails	1,000
May 16	East edge Chula Vista	San Diego	Reservoir	Cattails	750
May 17	Near San Luis Rey	San Diego	Reservoir	Cattails	500
June 3	Near Lodi	San Joaquin	Canal	Cattails	100
June 3	Near Tracy	San Joaquin	Sloughs	Cattails	750
June 3	E of Tracy	San Joaquin	Railway slough	Cattails, willows	2,500
June 3	S of Manteca	San Joaquin	Canal	Cattails	500
May 18	Near Los Alamos	Santa Barbara	Marsh	Cattails, tules	3,000
June 4	Near Oakdale	Stanislaus	Canal	Cattails	7,500
June 4	Near Oakdale	Stanislaus	Canal	Cattails	500
June 4	Near Oakdale	Stanislaus	Lake	Cattails	500
June 4	S Oakdale	Stanislaus	Canal	Cattails	200
June 4	Near Roberts Ferry	Stanislaus	Marsh	Cattails, willows	1,000
June 4	Near La Grange	Stanislaus	Dredger pits	Cattails	3,000
May 25	Near Verona	Sutter	Marsh	Cattails, tules	3,000
May 27	Near Orland	Tehama	Creek	Cattails	750
June 1	Near Woodland	Yolo	Canal	Cattails, tules	1,000
June 1	Near Woodland	Yolo	Marsh	Cattails	1,000
May	Composite of all areas	Yuba			5,000

During the nesting season of 1936 the writer and all coöperators were so occupied with other duties that the Tri-color survey was a by-product. It was not possible to make any nest counts in any of the areas; estimates are based solely on experience in other seasons. Field observations were largely by Jacobsen and Hunt, of the State Department of Agriculture, and by the writer, with many others recording observations in restricted areas.

In the table for 1936, the entry for Yuba County is a composite figure including a number of small colonies scattered over a wide area. Agricultural Inspector MacMath assisted the writer in this compilation. Likewise in the 1936 table, a 100-nest colony is reported near Firebaugh, in Fresno County. This was apparently merely a remnant of a much larger colony, the major part of which had already left the nests.

Roving bands of birds were noted in many localities where we were unable to find nesting sites. In some instances, during June, these feeding groups were composed largely of vociferous youngsters. On April 19, Jacobsen observed a small band of Tri-colors near Milpitas, Santa Clara County. Hunt observed scattered Tri-colors in Monterey County at several points in addition to the one colony actually found; these were seen near Prunedale on June 10, and near Moss Landing on June 12.

In San Luis Obispo County on June 11, Agricultural Commissioner Chalmers and Hunt found a few adult Tri-colors entering the tule border of Laguna Lake. On the same day a band of well over 1000 adults and young was observed in fields of the Waller-Franklin Seed Company just south of San Luis Obispo. On the same date occasional birds were observed by Hunt between Pismo and Arroyo Grande. Gross also saw a definite flight in the Arroyo Grande area, and noted a colony in Orange County.

On May 30, Hunt closely studied a group of about 35 Tri-colors feeding about a marshy swale four miles south of Murrietta, Riverside County. In San Diego County, the writer encountered roving Tri-colors near Lake Hodges and near San Dieguito reservoir on May 15, and near Vista on June 22.

In Fresno County, roving bands of adults were noted at several points on May 5 and on June 6 and 8. Several flocks were observed in western and northwestern Madera County on June 5. On June 8, several feeding bands were seen near Hanford, Kings County, and near the old Tulare Lake bed; on this date three roving groups were observed between Tulare and Earlimart.

Large numbers of roving and feeding flocks were noted in Kern County. On May 6, the writer estimated that 10,000 adult birds were feeding in the section between Connors Station and Buena Vista Reservoir. Other bands were observed occasionally in the Wasco area on both May 5 and June 8. On June 10, a group of about 30 adults and young was seen feeding in a pasture on the Matilija Ranch near Ojai, Ventura County. Gross reports a flying band at Ventura about July 9. On May 15, a flying band of Tri-colors was noted by the writer between Santa Ana and Costa Mesa, Orange County. Other feeding, or flying, flocks were observed by Jacobsen in Solano County in June.

John Cushing reported by letter that he observed Tri-colors at White Gulch, Marin County on the week end of April 11, 1936. Calvin Stevens of Le Grand, Merced County, late in May found a deserted thistle nesting-site of large size east of that place; the young had left the nests.

These widely scattered bands during the nesting season give proof of a distribution far more widespread than the actual nesting-site records show.

SAMPLE DESCRIPTIONS OF COLONIES

For the sake of brevity no more than general information on the colonies is entered in the tables. The writer has in his files, however, detailed data relative to all of the colonies listed in this report, with detailed localities and further notes on the activities of the birds. The following sample descriptions of some of the colonies illustrate variations shown by this species.

About twenty miles east of Sacramento a reservoir, on what is known as the Nimbus Ranch, owned by the Natomas Company, was dammed or dug, about 1912, as a source of water supply for gold dredgers. Cattail and tule growth developed about 1916, and since 1920 or 1921 blackbirds have inhabited the area in great numbers. Marsh growth in 1932 covered 30 to 40 acres. On March 4, 1932, the roosting population of this area, estimated at "nearly a half-million birds," fed over an area fully forty miles in diameter. By April 25, 1932, nesting was under way, and by May 1 many of the nests held full sets of eggs. In May, 1932, many trips were made to this marsh, and the estimate of several coöperators was placed at 100,000 nests. By June 1 most of the young were leaving the nests, and by June 10 many new nests were noted with fresh clutches of eggs. After close inspection of the area, the number of new nests in the marsh appeared close to 20,000. Again in 1933, this spot was densely inhabited. In a series of ten-foot squares stepped off in the cattails, the writer counted from sixteen to thirty-six nests, all occupied; the average was twenty-six. The total was placed at approximately 100,000 nests. By 1935, dredgers had so changed the terrain that only 2000 to 3000 birds returned to this place; the feeding area was too far away. In 1936 this locality was deserted; three smaller marshes a few miles away were densely occupied by a population totaling about 100,000.

On April 30, 1932, at a point five miles west of Watsonville, Piper found a colony of about 1000 Tri-colors nesting in a rather dry marshy area; there was no standing water, but there was a thick tangle of blackberry vines, nettles, and rather sparse cattails. Nests were uniformly in early stages of construction, with no eggs.

On May 14 and 15, 1932, Gabrielson and Jacobsen found a nesting colony in a patch of thistles on a small slough about fifteen miles northwest of Merced on the Crane Ranch road. The thistle patch was from 75 to 125 feet wide, forming an almost impenetrable jungle. Nests held eggs or young. These observers estimated that the birds numbered between 60,000 and 75,000 pairs.

On May 19, 1933, the writer discovered a huge flight of Tri-colors on the holdings of the Dodge Land Company and the Perriott Grant ranch which overlap the Glenn-Colusa county line northeast of Butte City. Here there are a number of sloughs which are not continuously filled with water; their width varies greatly, and it is virtually impossible to estimate the total area. On May 20, 1933, tens of thousands of birds were flying back and forth into the cattails and tules in these sloughs, carrying nesting materials. The birds were active over an area roughly four miles east and west by six miles north and south. The number of birds, apparently all nesting in the slough area, was so far beyond comprehension that after spending parts of three days here the writer gave up in despair with the thought that an estimate of 250,000 adults was ridiculously low. On July 18, 1933, another visit to the section disclosed a general area of about forty square miles centering around these sloughs which literally teemed with squalling young Tri-colors and adults hustling for food for the immense aggregation.

On May 10, 1934, a nesting colony was noted in marshes which extend from the Culver Ranch into the Cross Ranch, four miles east of Norman, Glenn County. About

two weeks later, after nesting was under way in the entire marsh, an irrigation company official, practiced in judging land areas, estimated that nesting covered virtually sixty acres. During the nesting period many nest counts were made on sample areas; all averaged close to one nest for each five square feet. Even at one to ten square feet, the nests in this marsh would number about 260,000. As the estimated number of nests listed in this report is 200,000, this permits sufficient allowance for any parts of the marsh not so heavily populated.

On May 19, 1932, Piper found a colony on the ranch of Douglas Whelan near Mission San Luis Rey, San Diego County, in a sheltered lake with a luxuriant tule margin on the south and east sides. He estimated that 2000 adult birds occupied the area, many of them busily engaged in carrying food to young.

NESTING ACTIVITIES

It is not the purpose of this article to go extensively into habits. Dawson (1921, p. 107) gives such a true and picturesque description of the general habits of nesting Tri-colored Red-wings that parts of it are quoted here.

> *Agelaius tricolor* is intensely gregarious, more so perhaps than any other American bird. Every major act of its life is performed in close association with its fellows. Not only does it roost, or ravage grain fields, or foregather for nesting, in hundreds and thousands, but the very day of its nesting is agreed upon in concert. In continuous procession the individuals of a colony repair to a field agreed upon in quest of building material; and when the babies are clamoring the loudest for food, the deploying foragers join their nearest fellows and return to the swamps by platoons and volleys, rather than as individuals.

Dawson's description of a large colony is especially accurate, and the writer has come well to appreciate his statement of the ease of underestimating the population of a colony which is described in the following words:

> A prosperous colony of Tri-colored Red-wings is an enormous affair. At the height of building activities it seems a perfect bedlam, and the composite roar can be heard a mile away. At the same time, one rather wonders at the mildness and restraint of the individual utterance. The flock noise at its worst suggests a colony of a thousand birds, whereas there are in reality tens of thousands—say thirty thousand birds in a typical citadel. . . Excited platoons and hurrying companies of birds sweep over the ground with rapid undulating flight, and lose themselves immediately in the all-devouring green.

The spontaneity of nest building has been observed on various occasions. It has sometimes been definitely known that no Tri-colors frequented a certain marsh for weeks. Suddenly—within a few hours—a horde of the birds arrives and deploys to feed; within four hours of arrival the entire band has been busily engaged in gathering nest material, and by the end of the second day eggs have been noted in the nests. Indeed, on several occasions the birds appear to have dallied along the way, and eggs were deposited in unfinished nests, and in a few instances upon the ground close to the marsh.

Tyler (1907, p. 177) and Dawson (*loc. cit.*) describe another trait that is commonly noted. In brief, in a small colony, all nests are of approximately the same age, and egg deposition starts in all nests within a two-day period. In a large colony, however, this is not always true. In one section of the marsh may be found fledglings, in another incubated eggs, and in another fresh-laid eggs. Sometimes these groups will be found in different sections of the marsh. In colonies of smaller area, however, the newer nests are more likely to be found in concentric rings about the original nesting site, the newest nests sometimes being found in weeds on the margins of the marsh, or, as Tyler found them, even on the bare ground at the margin.

In one or two instances the writer observed nesting birds in a colony over a period

of seventy-five days. In such a colony all stages of nesting could be found after about fifty days; the original nests were at that time deserted by the young, as were the second stage nests; yet in some sections of the marsh there were relatively fresh eggs, or nests just being built. Some of the late activity may be true second nesting; it may be nesting of late arrivals. The writer has the impression that colonies nesting early in the season may subsequently change their habitat, and some of them may nest again in different localities.

MORTALITY AND DESTRUCTION OF COLONIES

Of interest is the question of destruction of nesting sites and mortality of young. Heermann (1853*a*, p. 17) wrote of wolves and foxes eating young birds that fell out of the nests. Belding (1890, p. 122) wrote of a colony near Stockton where many of the young were dead. Evermann (1919, p. 3) found that skunks disturbed the nests. Mailliard (1914, p. 204) wrote of the Swainson Hawk feeding upon young birds.

The destruction of nesting habitats by man is of most importance. Reclamation and drainage have destroyed many favorable habitats. Areas in the vicinity of San Francisco and Los Angeles are now so highly developed that it is doubtful whether or not any colonies could exist there. Other habitats have been destroyed by the dredging or cleaning of reservoirs, marshes, and canals in order to destroy the growths of cattails and tules.

In the present studies many instances of destruction of colonies have been observed. Certain localities have been drained; others have been burned out. In the Sacramento Valley area, burning of cattails in the winter and early spring does not deter the birds, if the marshes or canals are burned *before* the start of new growth. In one marsh the ground was absolutely bare on April 1, but on May 20 the cattails were six feet high and teeming with birds and nests.

The writer has noted a number of colonies which deserted full sets of eggs without apparent cause. In other places, which were unprotected, high winds caused such damage to the cattails and tules as to cause desertion. A large gopher snake was taken from the center of one marsh with a nestling in its jaws and two more already swallowed. In other instances snakes have been observed feeding upon young birds which had flown to the margins of the marsh. Many instances have been observed of nests pulled down or tipped over; the prevalence of raccoon, mink, and other predatory mammals in the rice-field district leads to the conclusion that they were the probable cause. Crows were observed eating eggs and destroying nests in one colony. Cooper Hawks fed upon the adults of one colony until it deserted the nests. About the mouth of a Burrowing Owl den in Colusa County were found the remains of twelve fully-feathered juvenal Tri-colors from a colony a few yards away.

It has been noted that there is heavier mortality in dense marshes late in the nesting season than early. Evidently the steamy heat of the marsh in mid-June and late June is so great that incubation begins with the deposition of the first egg. In a number of late colonies it has been possible easily to distinguish variation in size of the three or four nestlings, the largest being partly pin-feathered, while the smallest was apparantly freshly hatched. In such instances the youngest, and smallest, nestling is frequently found dead, from starvation or suffocation; usually only the larger two survive. Mortality seems to be heavier in larger, denser colonies after the weather becomes warm.

Gross (MS) reported a nesting site near Livingston, Merced County, which was deserted after a heavy windstorm. Another colony showed destruction of many nests. Trails led through the tules and near the entrance to the marsh he found tracks of a

dog or coyote. Of another colony he wrote: "For some reason a large majority of the young birds had died. Most of the nests contained only one young bird, occasionally two, and rarely three. A few dead nestlings were found in the nests and dozens were observed in the tules and on the ground on the outer edges of the marsh." Olsen and Hunt, in Monterey County, found a Boyle king snake feeding upon young Tri-colors.

ADAPTABILITY IN NESTING

Surprising adaptability has been noted in the choice of nesting sites. While the true marsh habitat with its rank growth of cattails and tules is strongly favored, the frequency of nesting in other cover, even where favorable cattail swamps are closely adjacent, strongly endorses the conclusion that marshes are not necessary for the continued nesting of the species; nor does this study lead to the conclusion that there has been any marked change in preference during the history of the species. Nesting is herein reported in the following situations:

Cattails and tules (most favored habitat).
On the ground.
Sedge grasses.
Marsh weeds.
Nettles.
Nettles and briars.
Willows.
Thistles.
Thistles and mustard.
Alder and willow bushes.
Foxtail grasses.
Raspberry bushes.
Rose, wild plum, and blackberry thicket.
Blackberry tangle, nettles, and sparse cattails.
Barley.
Grapevine and willow jungle.

ADVERSE FACTORS AFFECTING ABUNDANCE

Heermann wrote in 1853 of the large numbers of Tri-colored Red-wings shot for the market. This practice still continues, and during the past five years it is probable that fully 300,000 blackbirds of the combined red-winged group have been marketed from the Sacramento Valley, with no apparent change in the status of any of the kinds involved. During the winter season of 1935-36, 88,000 blackbirds were shipped from Biggs alone.

Current weather cycles have unquestionably played a part. The past twenty-year period has in general been one of dwindling rainfall and lessened water supplies. Many acres of previously irrigated land reverted to nature for lack of water. Marsh areas in these districts disappeared, although thistles, nettles, and other nesting habitats remained.

Destruction of the birds by man, of nesting sites through drainage or reclamation, of nests by predators or by the elements, and other factors, have played their part. All combined, however, they have made only fractional inroads on this species during the period covered by this report.

FAVORABLE FACTORS

Rice culture, extensive irrigation in many districts often without parallel drainage facilities, and the development of many acres of marsh habitat through irrigation water, have gone far toward furnishing these birds with favorable nesting locations, even in some districts which before irrigation were arid plains. Rice culture began in 1910 to 1912, and gave these birds a marked advantage not previously known.

Heavy rainfall in the season of 1934-35 did much to replenish the water supply in some of these areas, and resulted in a noticeable increase in the nesting of the Tri-colors. Continuation of annual precipitation in normal or more than normal amounts for a few more seasons will assist greatly in furnishing nesting sites in areas which have been dry.

DISCUSSION

The following hypothetical history of the species may well be true:

(1) There were available up to 1880, according to the most accurate topographic maps of the period, extensive nesting areas composed of thousands of acres of true marsh growth and large areas of dense riparian associations. Nesting area was almost limitless, but little is known of the actual density of occupancy. Probably the limiting factor was the available food supply.

(2) During the last years of the 19th century and the earlier years of the present century, marshes were drained and reclaimed, and riparian jungles were cut away. Agricultural development was rapid, with the earlier stages of irrigation. It seems probable that in some part of this period the species reached its lowest ebb.

(3) With the development of the last quarter century, even though rainfall was light, conditions undoubtedly changed for the better. Irrigation has been widely extended and inadequate drainage facilities in many areas have permitted the development of favorable palustrine habitat where before there were arid plains. Modern agriculture, with its new grain crops, has greatly increased the available food supply. The growing of rice, beginning in 1910, has furnished both a favored food and, through the necessity for extensive irrigation, a regrowth of marsh vegetation for nesting and roosting.

It is not unreasonable to assume that during the pioneer period in California the distribution of this species was regulated by the food supply. There was so large an area of favorable nesting that the birds were unable to increase past an optimum point because of scarcity of food. During the second period nesting sites became progressively more scarce, without any marked increase in the available food supply. The modern period has brought about a marked increase in the available food supply which has enabled this species to regain lost ground and to extend its range into areas which before did not favor its existence. It may well be more abundant today than it was in pioneer times.

SUMMARY

Published literature on the Tri-colored Red-wing does not substantiate the fears expressed in 1931 for the welfare of the species. The records then available were too sparse to provide a justifiable basis of opinion. Specific records of nesting colonies are noted in only twenty-six publications.

During the six-year period from 1931 to 1936, inclusive, colonies observed by the writer and coöperators have totaled an estimated 1,500,000 nests. In addition, there were several thousands of adults each season which were not traced to their nesting sites. Colonies have been observed in 26 counties in California, and the survey of the range is still incomplete.

The first positive nesting record of the species in Oregon and the first Oregon-collected skins of the species now known have been reported. The first nesting colony east of the Sierran summit in California (excepting the questionable record at Lake Tahoe) was observed near Glenburn, Shasta County.

Colonies have been studied ranging in number from a low of about six pairs in Solano County to a probable high of well over 200,000 pairs in Glenn County; another colony of like size, in Butte County, has been noted, and others of 100,000 or more in other counties.

Large areas of probable nesting range have not yet been surveyed. The outer limits of nesting range as shown in the present report indicate that breeding Tri-colors should be found at least occasionally in fifteen California counties from which there are at present no published records.

Published records indicated an altitudinal distribution of the species that ranged from approximately sea level to 1500 feet; the questionable Lake Tahoe record was at approximately 6225 feet. During the six years of work herein reported, the species has been found to range from sea level in San Diego and Santa Cruz counties to approximately 4000 feet elevation at Glenburn, Shasta County, and about 4200 feet on Klamath Lake. Occurrence at the higher elevations is probably erratic and intermittent, possibly because of paucity of favorable nesting sites at these elevations.

In 1915 the San Joaquin Valley was called the metropolis of the species. While this probably was true at the time, it must be remembered that much less field work had been done in the great Sacramento Valley area than in the San Joaquin Valley. Reference to the distribution map (fig. 21) in this report shows Tri-color nesting places in eleven Sacramento Valley counties where there were no previous published records.

The chief result of these studies has been the demonstration of the extremely erratic nature of the species, both in winter and in summer. In one season nesting colonies have been found widely scattered over a large part of the State; in another there have been great concentrations in relatively restricted districts; in 1934, Glenn County might have been called the metropolis of the species. In 1933 and again in 1935 a large number of colonies was found in that part of Merced County east of the San Joaquin River. It seems possible that observations have not covered a sufficient part of the range in one nesting season to permit final conclusions as to the true status of the species.

There is no indication that the Tri-colored Red-wing is losing ground, even in the face of modern development; rather, the indications are that it is at least holding its own, and is probably on the upgrade. Unquestionably, certain areas have been altered so that no suitable nesting sites remain, but these areas constitute a small part of the entire nesting range.

The evidence produced during the period indicates that the Tri-colored Red-wing as a species is thriving, nesting in almost every county in which it nested forty to seventy years ago, in numbers nearly as great as ever known. Great adaptability in nesting has been shown, and marsh growth does not appear to be a positive necessity for survival over short periods of drought or change. There is a probability that the species is even now extending its range from a low point reached in the period of most restricted habitat, and that it may be found shortly in some areas now considered marginal.

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THE ECOLOGY OF BLACKBIRD (*AGELAIUS*) SOCIAL SYSTEMS

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INTRODUCTION

The conspicuousness of adaptive radiation in morphology tends to conceal the fact that often the slight differences between closely related species give no clues to their widely differing ecologies, because many of the important differences between species are the result of behavioral and not morphological adaptations. This study analyses the role of social organization of the Red-winged Blackbird (*Agelaius phoeniceus*) and the Tricolored Blackbird (*A. tricolor*) in the different ways in which these two species exploit their environment.

Knowledge of avian social systems began with natural history studies, but certain phases, such as territoriality, early attracted special consideration. In the 1930s, social systems began to be studied from the viewpoint of the comparative ethologist, who is primarily interested in the motivational and evolutionary aspects of behavior patterns, but whose publications contain a wealth of information about many ecological features of avian social systems. The mathematical approach to population parameters has provided a basis for considering the consequences of changes in social system characteristics upon basic population parameters, but biologists have in general been suspicious of this approach, which seemed to rest upon assumptions of doubtful biological validity. The result is rather widespread failure to realize the significance of certain features of social systems in quantitative terms, and failure to record and publish relevant information. Finally, the study of social systems from the modern ecological viewpoint has lagged behind other approaches because few observers have made use of the background of a century of Darwinian thinking in evaluating their observations.

In this study I have considered all features of social systems to be the products of natural selection just as are any physiological or morphological adaptations. To the question whether or not differences between social systems are adaptive, three types of answers are possible. Firstly, it may be assumed that the particular features of a social system are surely adaptive. Secondly, it may be assumed that the traits are purely fortuitous, without selective significance. Thirdly, it may be assumed that the particular traits are not adaptive but that they are associated with other, as yet unrecognized, differences which are adaptive (Maynard Smith 1958). In this paper I shall attempt to interpret as far as possible the characteristics of social systems in the light of the first of these three assumptions. The second is rejected because it is sterile as a basis for research and because the widespread and consistent differences to be discussed cannot be without selective significance. The third can never be easily accepted, for unless this statement of faith is followed by attempts to discover the traits of adaptive significance and their connection with the supposedly unadaptive trait, nothing is really explained. Furthermore, no such case involving polygenic traits has been shown to be true, and separation of desirable from undesirable traits will almost certainly occur with time.

Because the closely related and morphologically similar Red-winged and Tricolored blackbirds differ

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strikingly in their social organization, they are excellently suited to studies developed from the premises just given. Furthermore, these and other species of the family Icteridae are common, easily observed, and well-known. Moreover, their social systems range from routine territoriality to extreme coloniality and from monogamy to promiscuity and parasitism. My studies of these two blackbird species were carried out in north-central California from 1957 through the spring of 1960. The behavioral aspects of this investigation are being treated separately, and a report on autumnal breeding in the Tricolored Blackbird has already been published (Orians 1960).

This entire study was conducted under the supervision and guidance of F. A. Pitelka. The manuscript has also been read by P. Marler and G. L. Stebbins, both of whom have made valuable suggestions. Field work was made possible through the cooperation of F. Barnett of Lodoga, California, and C. Haskell of Marysville, who permitted access to their excellent marshes and also kindly provided lodging. A. S. Leopold generously made available his notes on blackbird activity at the Haskell Ranch since 1954. J. Parker of the East Bay Regional Park District permitted me to erect an observation tower on the small marsh at Jewel Lake during the spring of 1958. G. M. Christman aided in the preparation of the illustrations and provided data on Californian Indians. At many times during the course of this study I was aided in the field by fellow graduate students, including J. L. Brown, R. B. Root, E. O. Willis, M. Konishi, N. K. Johnson, D. R. Medina and J. Frost. Exchange of ideas with G. Collier, who is studying different aspects of the same species at Los Angeles, has been a helpful stimulus. For the two academic years 1958-1960 I was supported by a National Science Foundation Graduate Fellowship which permitted me to spend extensive periods in the field during the blackbird breeding season. Travel expenses were in part defrayed by a grant from the Museum of Vertebrate Zoology. Finally, my wife helped type the manuscript. To all I express my sincere appreciation.

STUDY AREAS

Field work was concentrated at four main areas, with supplementary observations at other localities (Fig. 1). Studies were first begun at Jewel Lake, Tilden Regional Park, Contra Costa County, in 1957. The lake, formed by a dam constructed across Wildcat Creek in the Berkeley Hills about 1900, has a maximum depth of 10 ft and is about 510 ft above sea level (Gullion 1953). About one-third of its 2.7 acres is filled with emergent vegetation, chiefly cattails (*Typha angustifolia* and *T. latifolia*), in which Redwings nest. No Tricolored Blackbirds breed there though occasional individuals roost in the autumn and winter. During the non-breeding season the marsh harbors a large roost of male Redwings, but females are normally present only during the nesting season. This marsh was studied intensively during 1958 and less frequently in 1959 and 1960.

FIG. 1. Study areas in central coastal California. Jewel Lake is marked by the large "X," the East Park Reservoir by the large circle, and the Haskell Ranch by the large square. Other study areas are indicated by small dots. Areas of large breeding concentrations of Tricolored Blackbirds are shown by diagonal lines.

Both species of blackbirds breed commonly at the East Park Reservoir in the Coast Ranges of Colusa County, a body of water formed in 1910 by a dam across Stony Creek. Because its waters are used to irrigate orchards in the Sacramento Valley near Orland, in the summer it may be reduced to a mere remnant of its winter size and, as happened in 1959, may completely dry up. Most of the shoreline of this large reservoir is devoid of emergent vegetation but there are two large marches where two major streams enter it. In addition, there are small patches of cattails in some of the indentations along the shores (Fig. 2). The reservoir is surrounded chiefly by heavily grazed blue oak (*Quercus douglasii*) parkland, chaparral (chiefly chamise, *Adenostema fasciculatum*), and, at the south end, by cultivated fields. I first visited the area briefly in 1957 and 1958, but at the end of March, 1959, I established a camp on the shores of the reservoir which served as a base for field work through the breeding season. By early June the water had already dropped to such a low level that no blackbirds remained there. Before the reservoir completely refilled in March of 1960, the cattails in the marsh at the southeast end were completely burned. Blackbirds began to breed as soon as new growth permitted and regular observations were also made throughout the second spring.

The Haskell Ranch, eight miles southeast of Marysville, Yuba County, is located in the heart of a ranching district. The marsh is surrounded by irrigated pastures and owes its existence to the run-off

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FIG. 2. Two of the isolated patches of cattails at the East Park Reservoir, Colusa County, California, April, 1959.

of excess water from them. It is burned every winter or early spring and cattails are cut to keep certain water areas open for duck hunting. None of these activities greatly influences the blackbirds, however, as the cattails sprout immediately following burning and there are always large areas which are not cut. Both Redwings and Tricolors breed there, and sometimes Yellow-headed Blackbirds (*Xanthocephalus xanthocephalus*) as well, though they were absent in 1959 and 1960. My studies were limited to these two years, though Dr. Leopold's notes were available for earlier years.

Observations were made during May and June, 1959, and throughout the fall, winter, and spring of 1959-1960 in the rice-growing and duck-hunting areas of Colusa and Glenn counties where extensive areas of cattails are maintained as duck habitat. Also, the rice fields are favorite feeding grounds for Tricolored Blackbirds, so that this region supports large populations of this species, Redwings and smaller numbers of Yellow-heads.

In addition to these four major study areas, observations were made in the rice-fields in Sacramento County and in the course of road travel between the study areas. Prospecting trips were made to other areas in the valley and foothills during each spring, and in 1958, an exploratory visit was made to areas in the San Joaquin Valley and foothills of the Sierra Nevada. Upland breeding Redwings were also briefly observed on Brooks Island in San Francisco Bay.

METHODS

The basic method in this study was simply to record in detail all features of social organization seen in the field, though advantage was taken of natural experiments offered by habitat differences, variations in weather, and human interference. In addition, I conducted elimination experiments in 1959 and 1960 to study repopulation. Each of the major displays and vocalizations of both species was assigned a symbol which enabled me to record more fully the activities of an individual bird as long as it remained in view. At Jewel Lake in 1958, I watched male Redwings several mornings each week throughout the breeding season. Less extensive observations were made in the afternoons. Extensive use has been made of these observations and the samples of activity sequences they include in the development of time and energy budgets. Particular attention was paid to the temporal and spatial aspects of social organization, as these are two features in which the two species differ most strikingly.

GENERAL BIOLOGY OF THE SPECIES

The widespread Redwing breeds from the Atlantic to the Pacific and from Central America almost to the Arctic Circle in west-central Canada (Bent 1958). Most individuals migrate from the colder portions of the range in the winter but some of the southern races, including the Californian ones, are resident. The Tricolored Blackbird has a much more restricted distribution, breeding from southern Oregon and the Modoc Plateau of northeastern California, south through the lowlands of California west of the Sierra Nevada to northwestern Baja California (Grinnell & Miller 1944). The species is not migratory but is nomadic and highly colonial (Fig. 3), though the pattern of nomadism is poorly known. Large flocks appear suddenly in areas from which they have been absent for months, they breed, and then quickly withdraw. Size and location of colonies vary from year to year, though certain sites, such as the East Park Reservoir and the Haskell Ranch, are regularly used. In his extensive studies of Tricolor distribu-

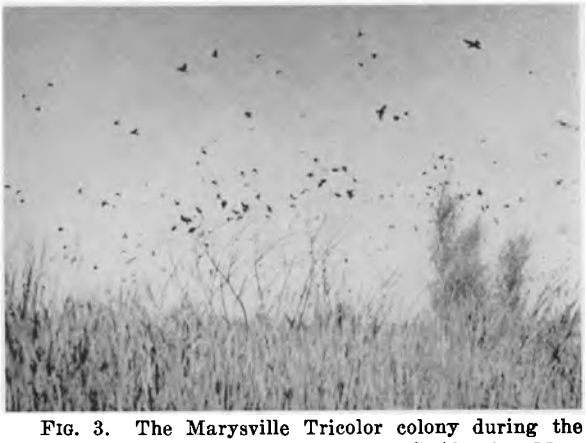

FIG. 3. The Marysville Tricolor colony during the nest building period, Yuba County, California, May, 1959.

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tion, Neff (1937) observed striking shifts in the location of colonies in the Sacramento Valley (Table 1), and to show that the variation is not simply due to variability in searching time, I have recalculated his data to express it as thousands of nests discovered per man-day spent searching (Table 2).

TABLE 1. Estimated nesting populations of *Agelaius tricolor* (figures represent thousands of nests; data from Neff 1937).

County	1931	1932	1933	1934	1935	1936
Butte	—	28	106	32	3	4
Colusa	—	32	16	37	3	5
Glenn	—	68	61	282	4	4.5
Merced	—	50	58	2	37	10
Sacramento	—	121	101	80	1	15
Sutter	—	10	13	6	1	3
Yolo	10	38	3	2	10	2
Yuba	113	2	7	50	5	5

TABLE 2. Thousands of nests discovered per man-day expended (calculated from data given in Neff 1937).

County	1931	1932	1933	1934	1935	1936
Butte	0	9.3	26.5	16.0	1.5	4.0
Colusa	0	10.7	5.3	18.5	1.5	5.0
Glenn	0	11.3	6.1	6.3	2.0	2.3
Merced	—	50.0	1.9	0.7	7.4	2.5
Sacramento	0	24.2	33.7	26.7	0.5	3.0
Sutter	0	5.2	6.5	6.0	1.0	3.0
Yolo	0.2	12.7	1.0	1.0	5.0	1.0
Yuba	1.9	0.03	0.1	0.8	0.1	2.5

The plumage of these two species is so similar that museum specimens are sometimes misidentified. The adult male Tricolor has a bluish luster to its black plumage, and the red of the epaulets is a dull crimson in contrast to the bright scarlet of the male Redwing. The most conspicuous feature of the male plumage, and the one which gives the species its common and scientific names, is the broad white border to the middle wing coverts. In most races of the Redwing these feathers are tipped with buffy, but in those races occupying the central Coast Ranges and Great Valley of California, the metropolis of the Tricolor, they are black so that the wing lacks the light stripe. This plumage difference between males is not only conspicuous to the human observer, it is the most important means of species identification used by the birds themselves. Occasional Redwings in a flock of Tricolors are singled out for special attack by a resident male Redwing in whose territory the flock lands.

Females are less easily distinguished because, although female Tricolors are darker than most races of the Redwing, in the area of distributional overlap female Redwings are the darkest of that species. Thus, the need of making accurate specific identification notwithstanding, there is a convergence of female plumage in the area of sympatry in contrast to the divergence in the males. In general, female Tricolors are more uniformly sooty than female Redwings, there being less contrast between throat and breast. In the autumn, female Redwings are strongly tinged with rusty on the back, a feature never shown by the female Tricolor.

TABLE 3. Comparative measurements of blackbirds.

Measurement	Species	Sex	Mean (mm)	Standard deviation (mm)	Range (mm)
Wing	Redwing	♂♂	124.5	2.4	118.8-131.6
		♀♀	102.9	2.6	97.5-108.5
	Tricolor	♂♂	120.8	2.1	115.5-125.2
		♀♀	105.2	2.1	102.2-111.2
Tail	Redwing	♂♂	84.7	3.6	75.9- 93.8
		♀♀	67.9	3.6	60.6- 76.0
	Tricolor	♂♂	81.1	3.1	75.4- 89.7
		♀♀	68.9	2.3	64.0- 78.6
Tarsus	Redwing	♂♂	28.2	1.1	25.0- 32.8
		♀♀	24.9	0.9	22.5- 26.6
	Tricolor	♂♂	28.1	1.0	26.6- 30.4
		♀♀	25.2	0.8	23.1- 26.8
Culmen	Redwing	♂♂	22.6	1.1	19.8- 24.9
		♀♀	19.4	0.9	17.5- 22.2
	Tricolor	♂♂	24.5	1.0	22.4- 27.3
		♀♀	21.8	1.0	19.8- 24.5
Bill depth	Redwing	♂♂	8.7	0.5	7.6- 10.1
		♀♀	7.5	0.5	6.1- 8.3
	Tricolor	♂♂	8.0	0.3	7.5- 8.5
		♀♀	6.9	0.8	6.3- 8.0

Sexual dimorphism in size, though great in both species, is less in the Tricolored Blackbird. Measurements of winter and spring specimens of both species are given in Table 3. In these specimens the male Tricolors are smaller than male Redwings in wing, tail, tarsus, and bill depth, but are larger in culmen. On the other hand, female Tricolors are larger than female Redwings in wing, tail, tarsus, and culmen, but are smaller in bill depth. This longer, narrow bill of the Tricolor is one of the most reliable morphological differences between the species.

The comparative weights of the two species are less certain. Among the MVZ specimens the male Tricolors average heavier than male Redwings and females heavier than female Redwings. However, in a sample of 47 male Tricolors and 31 male Redwings collected in the Sacramento Valley in October and November, 1959, the male Tricolors averaged lighter than the male Redwings, the difference being due to a decrease in the mean weight of male Tricolors.

Specimens collected in the autumn of 1959 were also measured for wing spread, maximum wing width, and total wing area. Wing spread and wing width are the same in females but the male Redwing has a greater wing spread and broader wings than the male Tricolor (Table 4). As a result, the Tricolor carries more weight per unit of wing surface than the Redwing (Table 5). The slender, more pointed wing of the Tricolor is conspicuous enough in the field to enable an experienced observer to identify the species at great distances.

As will be discussed later, the roles of the sexes are more similar in the Tricolor than in the Redwing and the species is less polygamous. The lesser degree

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TABLE 4. Wing measurement of blackbirds.

Measurement	Species	Sex	Mean (mm)	Standard deviation (mm)	Range (mm)
Wing spread....	Redwing	♂♂	15.4 in.	.30	15.0-16.1
		♀♀	13.2	.23	12.7-13.3
	Tricolor	♂♂	15.1	.19	14.8-15.6
		♀♀	13.2	.27	12.7-13.7
Wing width....	Redwing	♂♂	3.9 in.	.11	3.7- 4.1
		♀♀	3.2	.10	3.0- 3.3
	Tricolor	♂♂	3.5	.10	3.4- 3.7
		♀♀	3.1	.12	2.9- 3.5
Wing area.....	Redwing	♂♂	45.5 sq. in.	2.05	42.4-50.4
		♀♀	31.4	1.12	28.6-33.0
	Tricolor	♂♂	39.4	2.17	36.2-42.6
		♀♀	29.6	1.31	27.2-32.4

TABLE 5. Wing loading.

Species	Sex	Mean wing (sq. in.)	Mean weight (g)	Weight per square inch of wing surface (g)
Redwing....	Male	45.5	66.1	1.45
	Female	31.4	42.4	1.35
Tricolor.....	Male	39.4	63.3	1.60
	Female	29.6	46.5	1.57

TABLE 6. Evening roosting of Redwings, Jewel Lake, fall, 1958.

Date	10/16	10/23	11/6	11/13	11/20	11/27	12/4
Number of birds ...	1,544	1,368	2,134	2,296	1,701	1,686	2,596
Number of flocks...	173	159	205	191	152	173	184
Average flock size..	8.9	8.6	10.4	12.0	11.2	9.7	14.1

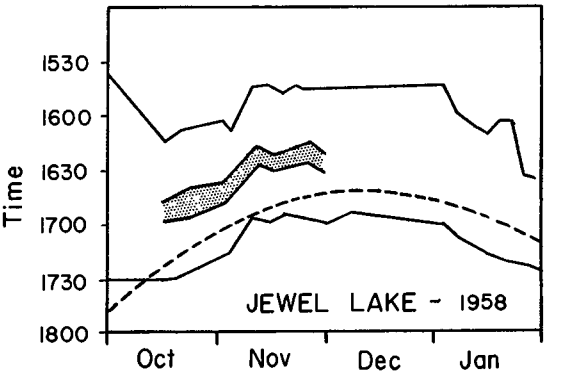

FIG. 4. Roosting of male Redwings at Jewel Lake. Solid lines indicate the arrival of the first and last roosting birds. The time of local sunset is shown by the dashed line. The period during which at least one-half of the birds arrived is indicated by the dotted area.

of sexual dimorphism in size thus fits in with the general picture in the Icteridae, where there is a correlation between the degree of size dimorphism and the extent of promiscuity (Selander 1958). The Tricolored Blackbird not only travels extensively during its nomadic wanderings, but both sexes fly great distances when gathering food for the young, a time when speed is of great importance. The narrow, more pointed wing has probably evolved in response to this need as it has in other avian groups. The Redwing male does not feed the nestlings, but engages in frequent conspicuous display flights over the territory. The broad wing is therefore useful as a display organ. The Tricolor has no such aerial displays.

THE SOCIAL SYSTEMS

1. THE RED-WINGED BLACKBIRD

Non-breeding Period. Outside the breeding season Redwings are highly gregarious, travelling and feeding in flocks of varying size, and roosting together in favored sites, usually over water, which attract birds from distances up to twenty miles or more. On evenings for which counts of roosting birds, mostly males, were made at Jewel Lake, the total number varied between 1,544 and 2,596; the number of flocks between 159 and 205; and the average flock size from 8.6 to 14.1 (Table 6). Flocks were smaller at the beginning and end of the roosting time, and the rate of flock arrival was greatest in the middle, so that the bulk of the birds arrived in a short period of time (Fig. 4). Arrival time, which closely followed the time of local sunset, was usually spread out over about one and one-half hours.

Enormous numbers of blackbirds roosted at the Colusa marsh in the autumn of 1959. Redwings and Tricolors were by far the most numerous but there were also many Brewer Blackbirds (*Euphagus cyanocephalus*), Cowbirds (*Molothrus ater*), Yellowheads and Starlings (*Sturnus vulgaris*). This roost attracted birds from an enormous area from the Sacramento River west to the foothills of the Coast Ranges and for at least ten miles north and south of the marsh. During the major part of the roosting flight on the evening of October 15, I estimated that 500-1000 birds per second were crossing a road south of the marsh, so that perhaps 750,000-1,500,000 birds entered the roost from that direction during the 25-minute period of maximum arrival. Since large flocks were also approaching the marsh from other directions as well, as least several million birds were roosting there at this time.

Whereas birds straggled in for over an hour in the evening, the morning exodus lasted only about 30 minutes. After the main morning feeding, the birds returned to the catttails where they rested, preened, sang, and bathed for much of the remainder of the day. Another major feeding flight in mid-afternoon preceded roosting for the night. Though the marsh was always full of birds at mid-day, there was a steady movement in and out and individual birds probably fed at least once each day in addition to the two main feeding periods.

A striking feature of Redwing social organization during the fall and winter is the segregation of

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the sexes which, though by no means complete, is very pronounced. As already mentioned very few females roosted at Jewel Lake, and though both sexes roosted abundantly at Colusa, most flocks seen feeding during the day were wholly or largely composed of one sex.

The enormous numbers of Redwings in the Sacramento Valley in the autumn obtain most of their food from agricultural land. I did not examine any stomachs, but by observing feeding birds it is easy to determine what they are taking. In late summer the birds concentrate upon seeds of the water grass (*Echinochloa crusgalli*), which is abundant around the edges of all rice fields and ditches in irrigated country, and rice, which is then coming into the milk stage. The greatest damage to the rice occurs at this time though the birds continue to utilize it heavily until it is harvested. Mechanical methods of harvesting rice leave large amounts of grain scattered on the ground among the stubble which the blackbirds continue to use until the fields are plowed. At this time of year, newly sprouting alfalfa fields are also used as sources of insects. As the autumn progresses, more and more fields are harvested and plowed, and feeding conditions become progressively worse. This is partly offset by the flooding of many fields to attract ducks for hunting, because these fields are not plowed and also produce many insects. Nonetheless, by early January the populations of Redwings and Tricolors in the Sacramento Valley are greatly reduced from their mid-autumn level. One can drive great distances in late winter and see few blackbirds where earlier there had been millions. It is not certain where they go at this time, but they probably move to the San Joaquin Valley and other areas to the south where agricultural practices are different.

Initiation of Breeding. The onset of the breeding period in the Redwing is marked by the establishment of territories by the males early in January in north-central California. At first the territories are occupied for only brief periods in the early morning and late afternoon, but gradually the amount of time spent there increases until the birds are present on or near the territories all day. At Jewel Lake in the winter, territorial males roost in the marsh together with a large number of birds which leave to nest elsewhere. The resident males briefly remain on their territories after the roosting birds have left, and then also leave for the rest of the day to feed (Fig. 5). It is not until mid-March that the males begin to feed in the area and not until early April that they remain all day and find the bulk of their food either on the territory or close to it. Females begin to arrive in early March, and by the end of the month most of them roost in the marsh with the males.

At the East Park Reservoir the initiation of the breeding season follows the same general pattern as at Jewel Lake except that events occur about two weeks later. Nights are much colder and vegetational development slower in the foothills than in Berkeley, where the influence of the Pacific Ocean moderates

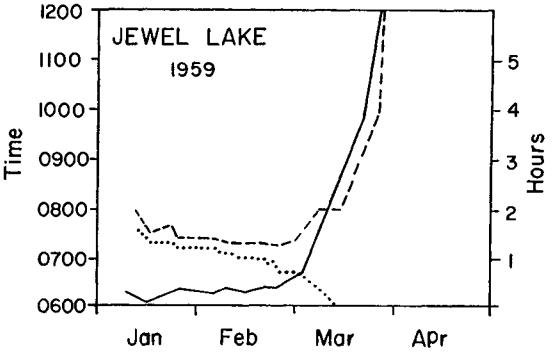

FIG. 5. Occupation of territories by male Redwings. The departure of the main roosting flock is shown by the dotted line; the departure of the territorial males by the dashed line; and the difference in departure time by the solid line.

late winter and early spring temperatures. However, the pattern at East Park Reservoir is also modified by other factors such as the rate at which the reservoir refills and the incidence of burning. In 1960 it was not until mid-March that the cattail marshes were completely reflooded, and no birds roosted there prior to that time. Burning results in the destruction of roosting and nesting cover, which delays the onset of breeding as the birds must wait until the new growth of cattails is high enough to support their nests. In normal years the first nests are constructed in dead cattails.

Nesting Habitat. Redwings nest in a wide variety of habitats (Allen 1914, Sherman 1932, Todd 1940, Nero 1956a), but most nests are located in emergent vegetation, particularly cattails. In California they commonly nest in vegetation bordering irrigation ditches, roadside and fencerow vegetation, riparian situations, weed and brush patches, cropland such as alfalfa and cereal grains, and even upland areas of mixed chaparral and grass. The chief requirement is apparently vegetation strong enough to support the nest surrounded by suitable feeding grounds. Burned cattail areas are used before the new growth sprouts if enough charred stumps remain. In fact, at the East Park Reservoir in 1959, burned areas were chosen instead of dense, unburned patches when both were available on one marsh area. On Brooks Island, the Redwing is a common breeding bird throughout the island, nests being located in bushes of poison oak (*Rhus diversiloba*) and coyote brush (*Baccharis pilularis*) even on the tops of the main ridges. I have not found this situation duplicated elsewhere, but I know of no mainland area with such varied, ungrazed vegetation as is found on the island.

Time of Breeding. The most complete studies of breeding chronologies were made at Jewel Lake in 1958 and East Park Reservoir in 1959. The major features of the breeding season for both areas are summarized in Figs. 6 and 7. Less complete observations at Jewel Lake in 1957 and 1959 show that, with minor modifications, the same pattern held for those

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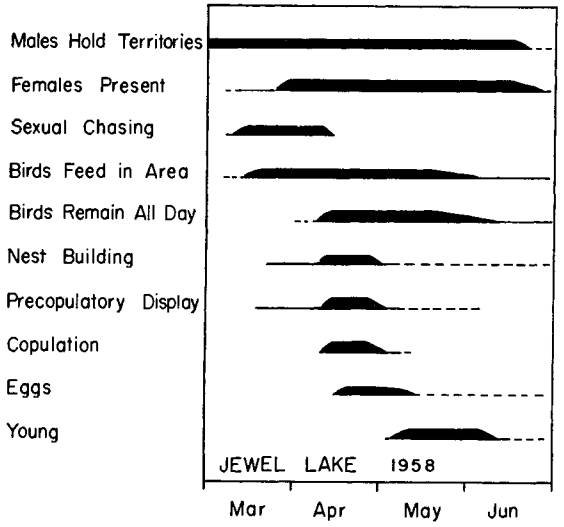

FIG. 6. Breeding chronology of Redwings, Jewel Lake, 1958.

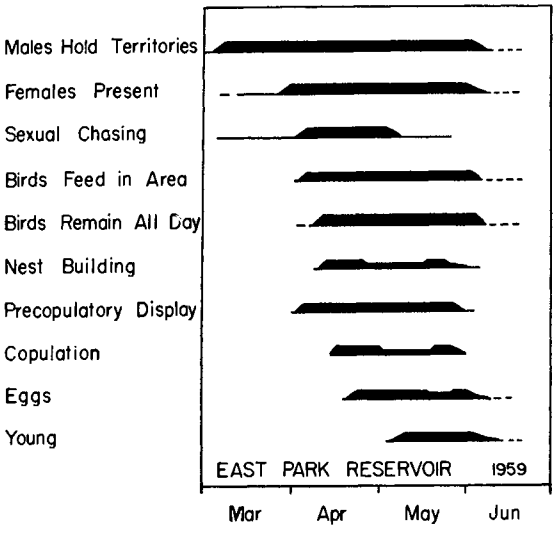

FIG. 7. Breeding chronology of Redwings, East Park Reservoir, 1959.

years as well. For example, the arrival of females, the beginning of chasing of the females by the males and the start of precopulatory displays were within one week of their 1958 time in 1959. Egg-laying in 1957 began two days earlier than in 1958. Because of burning, events were delayed in 1960 at the East Park Reservoir, but in the unburned areas, nesting began four days earlier than in 1959.

A general picture of timing of breeding in the Sacramento Valley was obtained by a census of territorial males along 60 miles of highway between Vacaville and Williams on the west side of the valley. The census area traversed irrigated and non-irrigated cropland and orchards not all of which were suitable blackbird habitat. Territorial males were counted

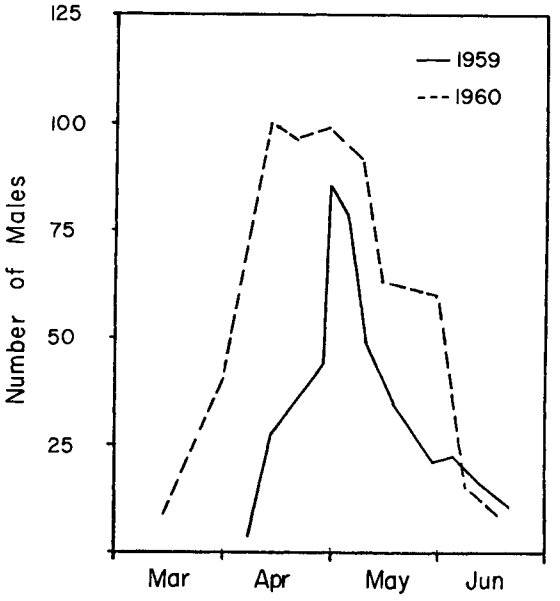

FIG. 8. Territorial male Redwings along 60 miles of highway on the west side of the Sacramento Valley. Birds were counted from an automobile travelling approximately 45 miles per hour.

from an automobile travelling approximately 45 miles per hour. Such a census can give only relative numbers but it does provide a rough picture of time of breeding in the area sampled (Fig. 8). Two points are of interest. Firstly, there is a sharp reduction in the number of birds in mid-May when many of the crops are cut, destroying nesting sites. Secondly, there is only a short period of time during which many birds are present. In 1960, the relatively longer plateau of high numbers was maintained only through continual occupation of new sites throughout the period, since cutting of crops and progressive destruction of nesting areas began in late April. Relatively few sites were suitable for a long enough period to permit the completion of the breeding cycle. Elsewhere in the valley, also, many nests were destroyed before the young had fledged, and though there are no quantitative data, it is quite certain that reproductive success in crop-nesting Redwings is generally poorer than in marsh-nesting birds.

At the East Park Reservoir in 1959, territories on the periphery of the marsh were occupied first and these areas were the most fiercely contested throughout the breeding season. As early as February 19, males displayed in the strip of marsh adjacent to the road for over three hours and more territories were set up than were maintained (Fig. 9). Once six males engaged in vigorous communal displays on the road, walking around each other in full song spread. The time of territory establishment by females and the start of nest building paralleled the pattern of territory establishment by the males.

Normally the females in a given marsh are out of phase with each other (Nero 1956b), but syn-

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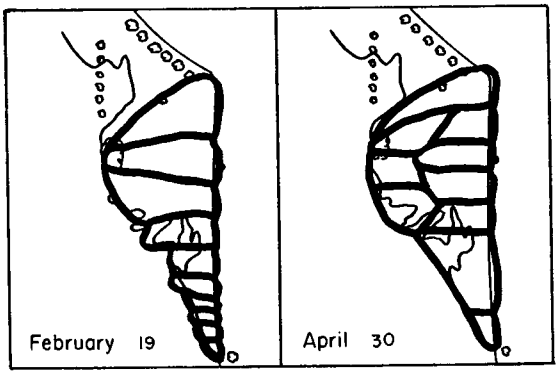

FIG. 9. Size of Redwing territories, East Park Reservoir, 1959.

chrony may be notable at the start of the breeding period. Most females began to nest at about the same time in 1959 in the isolated patches of cattails along the east shore of the East Park Reservoir. Even when all seven patches are lumped together, 51 of 72 nests were started within three days of each other (Fig. 10). It follows that most males in these areas were copulating with more than one female during the same period. Because of nest failure, second nestings, and the arrival of new females, nestings went out of phase so that by May 15 there were some nests in all stages of construction, others with eggs and young, and free-flying young in the same areas. A check of 30 nests at the Haskell Ranch on May 13 gave a similarly asynchronous picture.

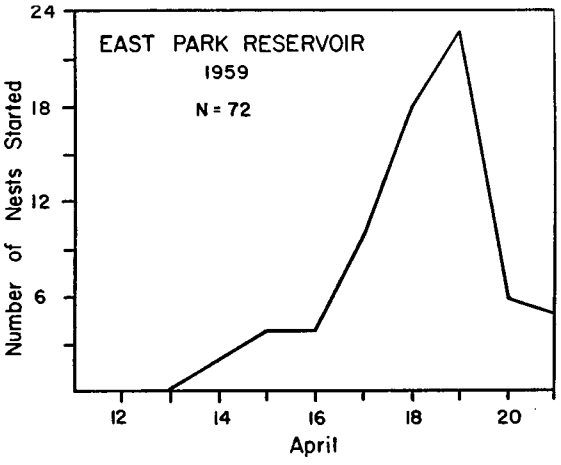

FIG. 10. Breeding synchrony among Redwings in the isolated cattail patches at the East Park Reservoir. The graph is a composite curve representing the pooled data from all seven cattail groups.

Territory. The territories of the males are defended by means of song, displays and chasing, but little is known about the variations in territory size and the factors influencing them. Linford (1935) found that territories of polygamous males were twice the size of those of monogamous males, but Nero (1956b) found no such relationship. I also failed to find any correlation between number of females and territory size.

The East Park Reservoir afforded the opportunity to study territory size in marsh areas of contrasting characteristics. Progressively more food is obtained on the territories in the small clumps of isolated cattails, the peripheral strips of cattails along the main marsh, and the main marsh itself, in that order. Territories were substantially the smallest in the isolated cattail clumps, larger in the peripheral strips, and largest in the main marsh (Table 7). Territory size was also determined for a portion of the Haskell Ranch marsh for both 1959 and 1960. In 1959, territories averaged larger than at the East Park Reservoir; but in 1960, they were comparable to territories at the periphery of the main marsh at the reservoir (Table 8). There are no other data from the valley floor with which to compare the results obtained at the Haskell Ranch. Nero (1956b) reported the average size of 17 territories in Wisconsin to be 3,550 sq ft. Average size, however, increased from 1947 to 1953 as the breeding population declined. Linford (1935) found much larger territories in Utah (average: 31,603 sq ft) but his birds gathered most of their food on the territories whereas Nero's birds did not.

TABLE 7. Size of Red-winged Blackbird territories, East Park Reservoir, 1959.

Situation	Number of territories	Average size (sq. ft.)
Isolated cattail clumps surrounded by grassland	21	2,512
Strip of marsh at the edge of the reservoir	17	8,477
Main marsh area, including both central and peripheral territories	22	10,653

TABLE 8. Size of Red-winged Blackbird territories, Haskell Ranch.

Year	Number of territories	Average size (sq. ft.)
1959	10	13,720
1960	16	8,575

There is thus a general correlation between the size of Redwing territories and the proportion of food obtained within the confines of the territory. However, it is doubtful whether food *per se* is the *proximate* factor by which territory size is regulated. The available evidence suggests that many bird species use features of vegetative physiognomy as their major cues in evaluating environmental suitability (Lack 1940), though the mechanisms by which

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this is accomplished are unknown. That this is also the case with the Redwing is suggested by change in territory size in response to stage of vegetative succession (Martin 1960) and by the response to burning of the marshes. The exceptionally complete burn at the East Park Reservoir marsh in 1960 left large areas devoid of emergent vegetation until the new growth appeared. In these areas the Redwing territories were initially several times larger than in 1959, but as the vegetation grew, additional birds inserted themselves, and territories became smaller (Table 9) though never as small as in the previous year.

TABLE 9. Size of Red-winged Blackbird territories on burned marshes, East Park Reservoir, 1960.

Roadside study area	Number of territories	Average size (sq. ft.)
April 29	3	26,500
May 15	4	19,875
North study area		
April 29	2	32,300
May 15	4	16,150

Food for the young may be gathered either on the territory or adjacent to it. The cattail areas at the south end of the main marsh at the East Park Reservoir were surrounded with sedge meadows from which much of the food was gathered, but often the birds flew across the road to an alfalfa field. Much food was gathered within the territory among centrally located territories. Where oak parkland adjoined the marsh, the birds frequently foraged among the grass and trees.

Several types of evidence suggest that territorial behavior is limiting breeding density on the study areas. Firstly, territorial challenges by newly arriving males are common much of the breeding season, and they may be vigorous and prolonged. For example, on April 19, 1959, I watched an intruding male, easily identified by his more orange epaulets, attempting to take over a territory for more than an hour. When first discovered at 0730, the intruder was submissive to the resident male, but by 0745 he began to give full song spreads on perches and in flight over the territory and began diving at the resident male, each time evoking a chase. By 0800 he was at times flying over the territory unchallenged by the resident, and his attacks were intensified so that he hit the resident while diving. By 0824 he was displaying to females flying over the territory, and had apparently succeeded in taking over, but at 0836 the resident male became more vigorous in his defense of the territory and the intruder left. He returned again at 0842 but was immediately chased by the resident and left again. By 0900 I had seen no further sign of him nor did he reappear later.

On April 30 at one of the isolated cattail patches I observed another unsuccessful territorial challenge which lasted intermittently from 1330 to 1445. The challenger held a nearby territory without cattails or other emergent vegetation which could support a nest. These are extreme cases, but the frequency of occurrence of territorial challenging by both sexes suggests that more birds would settle if they could. Nero (1956b) has reported at length on this aspect of territoriality in Wisconsin Redwings.

A second line of evidence is provided by the behavior of birds which have been trapped and banded. Twice, males which I had trapped fought to regain their territories from new males even though the duration of their confinement could not have been longer than a few hours. Nero (1956b) reported this also.

To test the matter further, the males from an area at the East Park Reservoir, containing 7 territories, were shot on May 8, leaving only one color-banded male whose vocalizations were being studied. The following morning, this male and a bird from across the stream had expanded their territories to include most of the vacated area, and though this was late in the season, there were five replacements by May 17 (Fig. 11). Since this was later in the season than any new areas were occupied in this region, it is likely

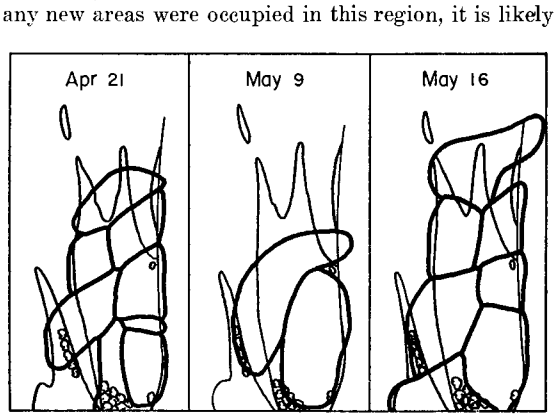

FIG. 11. Repopulation of a small marsh by male Redwings following shooting of the established territorial males. East Park Reservoir, 1959.

that the invading individuals were birds which had been prevented from breeding by the prior occupation of all territories by other males.

On the basis of these preliminary results, the experiments were continued in 1960. A section of the Haskell Ranch marsh and another area at the East Park Reservoir were selected as removal sites. Males were removed from the Haskell Ranch marsh eight times and from the East Park Reservoir five times (Table 10). At both sites first-year males, which do not normally hold territories, did so as removals continued. All such birds had functional testes. How long they would have been able to defend their territories successfully is not known. One of the replacement adult males, on the other hand, had nonfunctional testes.

Observations following shooting demonstrated that replacement was often quite rapid. Dr. Leopold observed the Haskell Ranch area on the morning of April 12, the day following the first shooting, and

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TABLE 10. Red-winged Blackbird removal experiments, 1960.

HASKELL RANCH		EAST PARK RESERVOIR	
Date	Number of ♂♂ shot*	Date	Number of ♂♂ shot
April 11	5	April 11	2
April 20	5	April 28	3
April 23	3	May 7	3 (1)
April 28	2 (1)	May 15	3 (1)
May 8	3	June 8	2
May 15	3 (1)		
May 30	3 (1)		
June 16	2		

* Figures in parentheses indicate first-year males.

found all territories reoccupied. Several times I observed a replacement to occur within an hour and once within fifteen minutes. Particularly during April, when activity is at its peak, it would probably be possible to get daily replacement, so that the removals actually made give no idea of the number of birds which could be taken from a marsh during a season, nor what the seasonal pattern of time required for replacement might be.

Ever since the publication of Howard's (1920) book, territoriality has attracted considerable attention, but progress has not been commensurate with the effort expended (Hinde 1956). Data from blackbirds suggest some new avenues of approach. The role of territorial behavior in limiting the density of breeding birds, strongly indicated for the Redwing, should be tested for more species. Howard believed that density was limited by territorial behavior, but his view has been challenged by Lack (1954). Stewart & Aldrich (1951) and Hensley & Cope (1951) observed repopulation following shooting in coniferous forest insectivorous birds, but their experiments were performed during a spruce budworm outbreak and the results may not be generalizable.

The role of different factors in influencing territory size may profitably be explored by studying variability in territory size in different habitats. Some species, such as the Redwing, change their spacing system with habitat, providing clues to its significance. The value of comparative studies of closely related species has been largely ignored, but often such species differ strikingly in their territorial behavior. This aspect of blackbird spacing will be discussed following the presentation of data on the Tricolored Blackbird.

Mating System. It is well known that the Redwing is polygynous, the females maintaining territories within the larger territories of the males. Females regularly breed when they are one year old though it is not known if they always do so. Males do not normally breed until two years of age, though they have been observed holding territories (Beer & Tibbits 1950) and, rarely, breeding (Wright & Wright 1944, Nero 1956b) when one year old. First-year males, some of them reproductively mature, were common around the marshes and attempted to occupy territories. Some held small areas for short periods of time, but I had no evidence that they ever succeeded in fertilizing any females, nor is it known whether any of the first-year males which held territories after removals copulated with females.

Determining the number of males on a given marsh is a relatively simple task, but females are much more difficult to count. Counting all the nests in the area only gives a rough estimate of the number of females because of the many repeat nests following failure. Consequently, I was able to determine the actual sex ratios in only a small portion of the Redwings I studied. Precise figures are also rare in the literature. On my study areas the number of females per male has ranged from one to six. My data and those from the literature are given in Table 11.

TABLE 11. Red-winged Blackbird sex ratios.

Source	Number of ♂♂	Number of ♀♀	Average number ♀♀:♂
Smith (1943).....	23	37	1.61
"	40	110	2.75
"	42-46	115-117	2.50-2.78
Nero (1956).....	25	49	1.96
This study:			
E. Pk. Res....	29	108	3.72
Haskell R.....	13	37	2.84

They suggest the possibility of geographical variation in sex ratio, but in the absence of data on temporal variation nothing definite can be said.

Male Redwings take no part in nest building or incubation. Most of them do not feed the nestlings either, but I observed one male at the Haskell Ranch and one at the East Park Reservoir regularly bringing food to the nestlings. Also, one male on Brooks Island was seen with food in his bill. Once the young fledge, however, the males regularly feed them.

Clutch Size and Nesting Success. Reliable information on clutch size is available only for 1960 (Table 12). No clutches of five or six were found at the East Park Reservoir in 1959, a drier year, suggesting that there might be some yearly variation in clutch size, but more data are needed to confirm this. Nesting success was also better in the wetter spring of 1960 (Table 13).

Feeding Behavior of Adults. During the breeding season, adult Redwings and Tricolors utilize a wide variety of animal and vegetable foods. The use of the bill in gaping in almost all feeding situations makes it possible for these birds to utilize effectively food resources unavailable to species which do not gape (Beecher 1951). Gaping appeared in my hand-reared Tricolors by the time they were two weeks old. The effectiveness of gaping is most striking when the birds are feeding in shallow streams. I have observed Redwings turning over stones weighing as much as

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TABLE 12. Clutch-size in the Red-winged Blackbird.

Location	Year	No. of Eggs per Clutch					Mean clutch size
		2	3	4	5	6	
Haskell Ranch.....	1960	1	9	10	—	—	3.45
E. Park Reservoir....	1960	2	23	55	4	1	3.75

TABLE 13. Fledging success of Red-winged Blackbirds, East Park Reservoir.*

Year	Number of nests	Average number of young per nest
1959.....	16	2.31
1960.....	12	3.00

* *Note:* Estimates based upon nests fledging at least one nestling; nestling counted as fledged if it reached at least an age of one week.

45 grams either by inserting the bill underneath the stone and gaping it up and away from the body with the upper mandible, or by pushing it toward the body with the lower mandible. This exposes the plecopteran and dipteran larvae beneath the rocks. Excrement of grazing animals is similarly handled.

Floating debris among stones and aquatic vegetation is frequently moved by a sideways motion of the head with the bill fully gaped. This same movement is also used when feeding in grassland where it is used to move dead material from the ground surface. It has also been reported to be used to extract spittle bugs from their froth (Macklin 1958). Regular gaping movements are also used in cattails and in grassland, the bill being inserted into the vegetation and then gaped to expose any insects and seeds within. Gaping is also used when the adults are feeding among the foliage of trees, but much foliage gleaning is achieved by merely searching from leaf clump to leaf clump without any gaping movements, and the same holds true for grassland feeding. Redwings have been reported splitting open dead ragweed stalks in the winter, thereby exposing pupae of *Epiblema strenuata* (Fischer 1953). In all gapers the skull morphology is modified to permit them to see straight ahead between the widely spread mandibles (Lorenz 1949).

In calm weather, the adults, especially the males, successfully catch insects on the wing, though they are definitely less adept than flycatchers or waxwings. On warm April and May mornings at Jewel Lake, when emerging dragonflies ascended from the cattails in their first flights, male Redwings were able to catch a large percentage of them, but if the bird missed on its first try, the insect was subsequently able to outmaneuver it, although waxwings still readily caught them at this stage. Both Redwings and Yellow-headed blackbirds utilize emerging dragonflies heavily in other areas also (Kennedy 1950).

In Californian annual grassland, filarees (*Erodium botrys* and *E. cicutarium*) are among the most

FIG. 12. Stripping of *Erodium* seeds by Redwings; seed on the right has been stripped.

abundant plants. When the seeds ripened in mid-April at the East Park Reservoir, the Redwings stripped the plants (Fig. 12), attacking the seeds from the base and peeling them off. In 1959, nearly all *Erodium* plants around the reservoir had been completely stripped by early May.

2. THE TRICOLORED BLACKBIRD

Non-breeding Period. Outside the breeding season, Tricolored Blackbirds feed in the same situations as Redwings and mixed flocks are common. Roosts are located in the same types of habitat and are often shared between the two species. Tricolors roost later in the evening than Redwings, and, in my experience, the sexes do not segregate at any time. As in the Redwing, there is a mass exodus from the Sacramento Valley in the late winter, birds being absent from large areas for several months. Since the Tricolor is not known to occur in large numbers outside the Great Valley of California, it is likely that the bulk of the population moves to the San Joaquin Valley where personnel of the U. S. Public Health Service, working on encephalitis control, observe them in enormous numbers.

Initiation of Breeding. The Tricolored Blackbird has long been known to be highly colonial when breeding (Heermann 1853, Mailliard 1900, 1914, Tyler 1907, Dawson 1923, Neff 1937, Lack & Emlen 1939), but little was known about the organization and operation of these colonies. In particular, no one had seen the events leading up to and culminating in the starting of a colony, nor had individuals been observed closely from blinds. It was one of the ma-

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jor objectives of this study to find out as much as possible about the organization of the breeding colonies of this species. I obtained detailed observations at the East Park Reservoir in 1959, and at the Haskell Ranch in 1960.

There is no other marsh within 30 miles of the East Park Reservoir, so that birds are forced to roost close to where they will nest. By mid-February, 1959, the reservoir had filled enough to reflood the marshes and several thousand Tricolored Blackbirds were roosting there. During mid-March some of the males began to display and preliminary exploration of cattails began. Birds flew to the cattails, sang, preened, and then suddenly shifted position and repeated the performance. From an observation tower erected April 5, however, I could clearly tell that while most males sang, few displayed. On April 15 only five or six males out of several hundred showed any signs of territorial behavior, and I had seen only one nest-invitation display.

The birds came to roost progressively later (Fig. 13) following the time of sunset, but after the first week of April they began to arrive earlier in the evening and spent more time singing in the cattails in the morning (Fig. 14). However, most of the

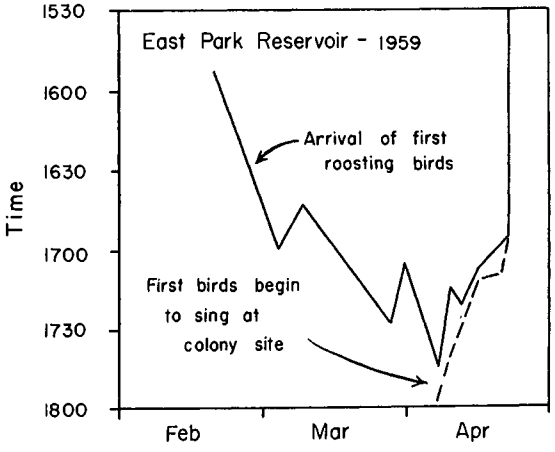

FIG. 13. Roosting of Tricolored Blackbirds, East Park Reservoir, 1959.

day was still spent, and most food was gathered, 10-15 miles from the roosting area.

Dense concentrations of flocks of birds at different loci in the marsh, first observed April 10, was quite conspicuous the subsequent week. Suddenly all the resting birds would fly up and gather in one spot, some of them landing, others fluttering above the vegetation. After a few minutes they dispersed again, only to repeat the performance at another spot a few minutes later. This continued through the first few days of colony establishment, and was noted at several other colonies during the nest-building period. At no time was I able to detect any change in the environment which might have triggered such behavior, and the latter may simply be a part of a colony-site investigation ritual.

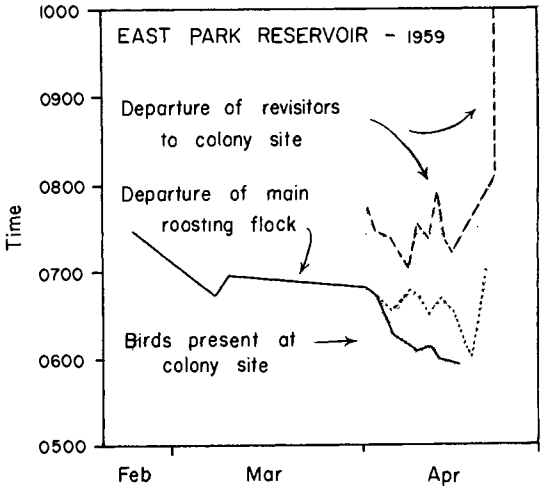

FIG. 14. Initiation of breeding among Tricolored Blackbirds at the East Park Reservoir, 1959.

Early in the morning of April 12, I first observed females carrying nesting material in their bills for a few minutes before dropping it. They were observed to do this again on April 14 and April 16, but it was not seen thereafter until true nest building started. In fact, evening activity of Tricolors around the marsh was generally reduced from April 16 to April 19, giving no sign of impending events.

On April 20 the birds remained all day. Hundreds constantly streamed back and forth from the cattails to the grassland feeding areas surrounding the reservoir. Displaying birds in the cattails shifted sites, formed dense concentrations, flew off to feed and returned. At times the whole marsh was deserted, all birds being scattered on the adjacent hillsides, and then a few minutes later hundreds would stream back into the cattails. At 1300 I observed the first females carrying nesting material and early the next morning many were building vigorously. Though many birds immediately settled on territories others shifted from place to place in the cattails through most of April 22, but by April 21 most of the males were singing from platforms of bent cattails low in the vegetation. Often loud choruses came from a seemingly empty marsh.

By morning of April 22 nest building was intense in all areas which I could observe closely, and I saw the first copulation at 10:30. By afternoon copulations were occurring everywhere and many nests were already being lined. Both nest building and copulations continued all the next day and in the morning of April 24 I found the first eggs. By April 28 nest building was nearly over, but copulations continued everywhere. Many females were then incubating clutches of three eggs. By April 29 the males had nearly deserted the marsh and I saw only two females still carrying nesting material. I saw the last copulation April 30, after which there was no activity other than the feeding flights of incubating

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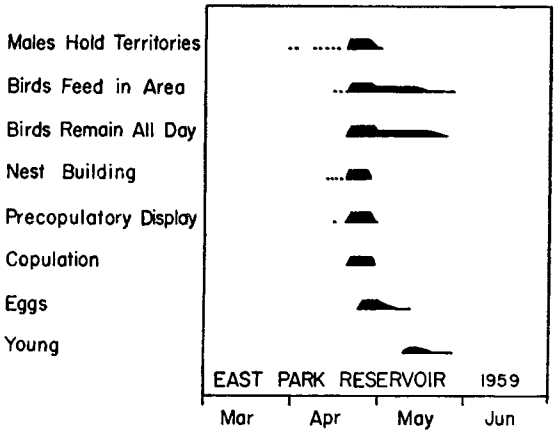

FIG. 15. Breeding chronology of Tricolored Blackbirds, East Park Reservoir, 1959.

females. The major features of timing of events in this colony are shown in Fig. 15.

In many areas in the valley Tricolors do not roost at the site prior to colony establishment. At the Haskell Ranch in 1960, small flocks occasionally flew over the marsh, but no birds were roosting in the breeding marsh as late as April 11. Nonetheless, thousands of birds were building nests April 19. Other observers have noticed active colonies in areas which were devoid of birds a few days earlier (Neff 1937), although in most cases early morning activity would not have been noticed.

Nesting Habitat. In addition to cattails and other emergent vegetation, Tricolor colonies are situated in a number of other vegetation types. Of the twenty-five colonies I have studied, 16 have been in cattails and other emergent vegetation, four in grain fields, one in alfalfa, one in a mustard patch, one in a safflower field, one in thistles along an irrigation ditch, and one in trees along a river. Of 236 colonies found by Neff (1937), mostly in the Sacramento and San Joaquin valleys, from 1932 through 1936, 224 were in cattails or other emergent vegetation. These differences may result, at least in part, from differences in searching habits of the different observers, but in most areas draining has been much more complete than it was when Neff made his studies. The favorable rice-growing areas are now virtually devoid of marshes, so that there is reason to regard at least some of the difference as real.

Time of Breeding. Extreme synchrony, as found at the East Park Reservoir, is characteristic of most colonies of Tricolored Blackbirds (Tables 14 and 15). Even in colonies as large as 50,000 to 100,000 nests, all eggs may be laid within one week. The number of nests started daily in a large colony (Haskell Ranch) and a small colony (Lake Isabella) are shown in Figs. 16 and 17. On the other hand, some colonies, such as the one at the Capitol Outing Club in 1959 and 1960, grow through the addition of new birds on their peripheries so that, while any given area is uniform, different parts of the colony vary. For example, at the Capitol Outing Club on June 5, 1959, young were being fed in nests in the northeast

TABLE 14. Time of events in Tricolored Blackbird colonies—Spring 1959.

Colony	Number of nests	Nest-building	Egg-laying	Incubation	Feeding young
E. Park Res.	1,500	Apr. 21-Apr. 28	Apr. 25-May 1	Apr. 28-May 11	May 10-May 20
Haskell Ranch	15,000	Apr. 28-May 6	Apr. 30-May 9	May 2-May 22	May 14-June 5
Mustard Patch	14,000	May 1-May 8	May 5-May 12	May 7-May 25	May 19-June 10
Marysville	40,000	May 3-May 10	May 6-May 13	May 8-May 31	May 20-June 14
Cap. Outing C.	80,000	May 8-June 9	May 11-June 12	May 14-June 16	May 28-June 28
Alfalfa Field	50,000	May 9-May 15	May 13-May 18	May 16-May 30	May 28-June 15
County Line	75,000	May 15-May 21	May 18-May 24	May 20-June 6	June 3-June 20

TABLE 15. Time of events in Tricolored Blackbird colonies, 1960.

Colony	Number of nests	Nest-building	Egg-laying	Incubation	Feeding young
Haskell Ranch-A	1,500	Apr. 18-Apr. 23	Apr. 22-Apr. 25	Apr. 25-?	destroyed
E. Park Res.-A	50	Apr. 21-Apr. 25	Apr. 25-Apr. 29	Apr. 28-May 9	May 7-May 29
Marysville	800	Apr. 29-May 4	May 2-May 6	May 5-?	destroyed
Madison	70,000	May 4-June 13	May 8-June 17	May 11-June 29	May 22-July 13
Buttes	6,000	May 10-May 15	May 14-May 19	May 17-?	destroyed
Gridley	35,000	May 11-June 14	May 15-June 17	May 18-June 28	May 30-July 15
County Line	4,000	May 17-May 25	May 20-May 29	May 23-June 9	June 2-June 30
E. Park Res.-B	600	May 17-May 22	May 21-May 25	May 24-June 6	destroyed
Riego Road-A	500	May 17-June 3	May 21-June 7	May 24-June 18	June 4-July 5
Cap. Outing C.	100,000	May 17-June 16	May 21-June 19	May 24-June 25	June 5-July 10
Haskell Ranch-B	15,000	May 23-June 25	May 27-June 29	May 30-July 11	June 10-July 28
Safflower	20,000	May 28-June 1	June 1-June 5	June 4-June 16	June 15-July 3
Riego Road-B	30,000	May 28-June 1	June 1-June 6	June 4-June 17	June 15-July 4

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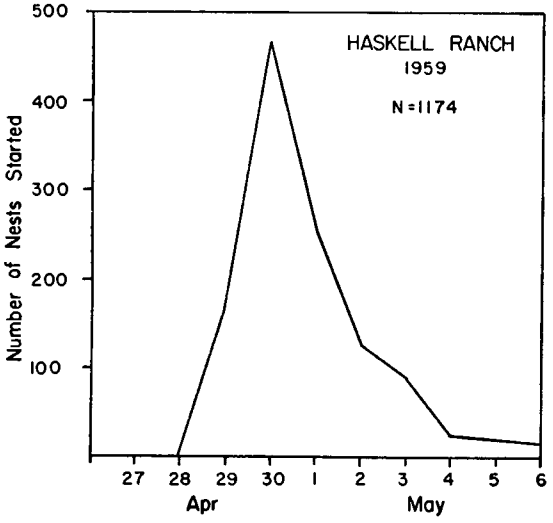

FIG. 16. Breeding synchrony in a large colony of Tricolored Blackbirds.

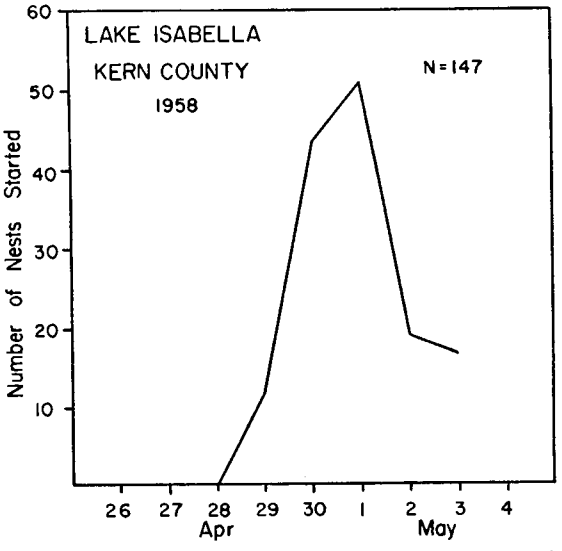

FIG. 17. Breeding synchrony in a small colony of Tricolored Blackbirds.

part of the colony, farther southwest all females were incubating, and at the extreme corner of the colony nests were still being constructed. This type of colony organization has been noted before (Tyler 1907, Dawson 1923, Lack & Emlen 1939), and Dr. Leopold has observed it in previous years at the Haskell Ranch.

Occasionally shortage of nest sites forces still a third form of synchrony not heretofore reported. In a colony found May 4, 1958, in Kern County, nests with eggs, others with nestlings, and still others with fledged young were mixed throughout the colony situated in a small patch of cattails growing in a stock-watering pond, which was the only marsh for miles. Apparently successive waves of birds moved into the cattails to establish territories as soon as the preceding males vacated theirs. Two waves of birds established themselves in the Madison colony in 1960, and nests in all stages of construction and occupation characterized the two autumnal colonies studied in 1959 (Orians 1960).

Time of breeding varies considerably within small areas. Starting dates in colonies I have observed have ranged from April 1 to May 28, and eggs have been reported in the literature from April 1 to June 17 (Bent 1958). Basically, three major types of areas are utilized for breeding; the grazing lands and dry farming areas of the foothills, irrigated agricultural areas in the valley with little or no rice, and the rice-growing areas. In both 1959 and 1960, breeding began earliest in the foothills and latest in the rice country (Table 16) even when one includes the nesting at the East Park Reservoir in 1960, which was greatly delayed by burning. Early breeding in the foothills, also reported by Dickey & van Rossem (1922), occurs in spite of the fact that spring temperatures are cooler in the foothills than in the valley. It is adaptive because in non-irrigated country the vegetation dries up in May with the termination of the rains. However, before planting time in late April, the rice fields are dry and barren. After being reworked and fertilized, they are flooded with about eight inches of water and seeded from the air. To discourage other grasses from invading, the water is maintained at this depth until the rice has sprouted some 18 days later. When this occurs, the water level

TABLE 16. Time of breeding in the Tricolored Blackbird.

Year	Habitat	Number of colonies	Range of starting dates	Mean starting date
1958.....	Foothills	5	Apr. 1-Apr. 30	Apr. 20
1959.....	Foothills	1	April 21	Apr. 21
1960.....	Foothills	2	Apr. 21-May 17	May 4
1959.....	Valley cropland (no rice)	2	Apr. 28-May 3	May 1
1960.....	Valley cropland	4	Apr. 18-May 23	May 6
1959.....	Rice country	4	May 1-May 15	May 8
1960.....	Rice country	7	May 10 May 28	May 17

is lowered until only 1-2 inches remain. At this time adult blackbirds are able to wade through the shallow water or hop from clod to clod, gathering the insects which by then are becoming more common. Before this time the rice fields could not support Tricolor colonies.

Territory. Territory sizes in dense Tricolor colonies are difficult to measure accurately, but by estimating distances between neighboring males I have determined that territories are usually 35 sq ft or less in dense vegetation although they may be larger in less suitable cover. The area is defended without aerial displays from a low platform of bent cattails. The tops of the vegetation form neutral ground over which prospecting males and females move without being attacked. It is only when an intruding male actually moves lower down into

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the vegetation that he is chased. The male defends his territory only for that week when the females are nest building and actively soliciting copulation. Once the clutches are complete he leaves and may not visit the territory again until the young hatch.

To support the food needs of thousands of young birds, a large area must be exploited by the adults and this area forms the ecologically significant territory. Figs. 18 and 19 show the pattern of utilization around the East Park Reservoir and the Marysville and Colusa colonies in 1959. At these colonies, birds travelled up to 4 miles from the colony site and more than 30 sq mi of land were exploited for food. At the Marysville colony, conditions were excellent for observing changes in feeding pattern during the nesting period.

Details of the temporal pattern of environmental utilization are given in the thesis manuscript deposited in the library of the University of California. The general picture which emerges from these observations is that Tricolors react quickly to any changes in the surrounding environment which make food supplies more readily available. As soon as pastures were flooded or a crop cut or raked, thousands of birds descended upon the newly exposed insect supply. The source of food is apparently communicated to others by the direction from which incoming birds approach the colony. I observed no special behavior which might have assisted with this, but communication was nonetheless efficient.

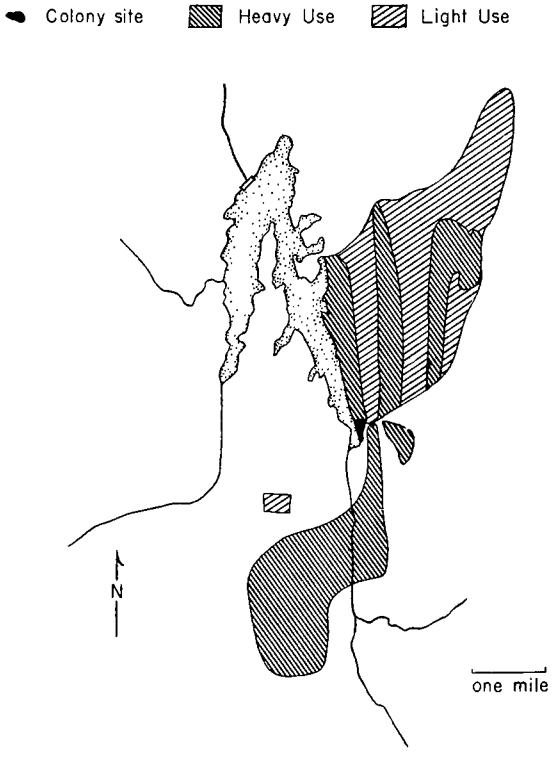

FIG. 18. Feeding grounds of Tricolored Blackbirds during nest building and incubation periods at the East Park Reservoir, 1959.

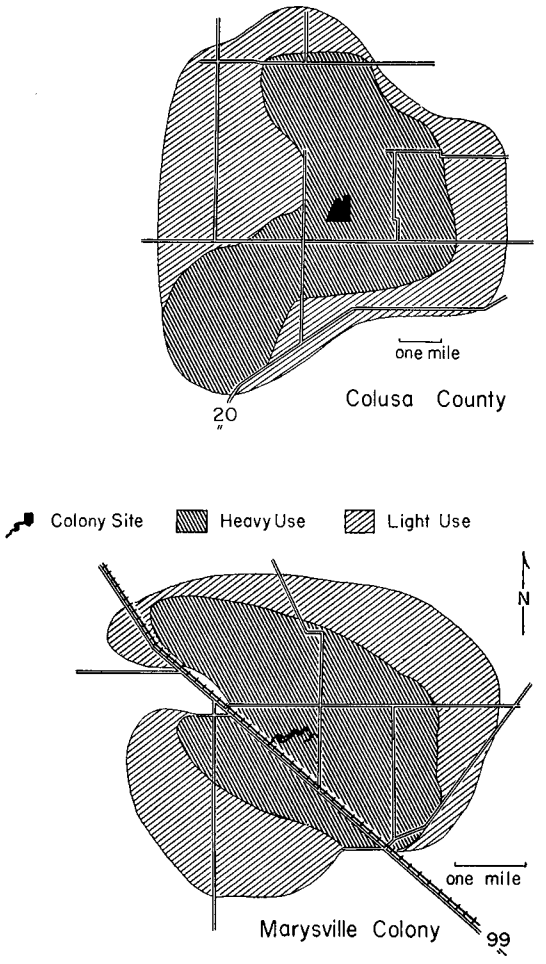

FIG. 19. Feeding grounds of Tricolored Blackbirds at the Colusa and Marysville colonies, 1959.

Mating System. As in the Redwing, the males do not breed until their second year, but at least some females do so when they are one year old. Two females banded as nestlings at the East Park Reservoir in 1958 were among the breeders in 1959. Yearling males regularly establish territories in the breeding colonies, but they are crowded into the less desirable sites. At the Haskell Ranch in 1960, three yearling males defended territories for several days around my observation blind. They gave the full complement of reproductive displays and vocalizations, and successfully evicted prospecting adult males. One of the yearlings attracted a female that started building a nest, but she stopped when it was half completed. I saw no first-year males copulating with females, but cannot assert that they never do. In contrast, Lack & Emlen (1939) reported that first-year males did not hold territories but rather dashed in for attempted copulations. Since I did not observe first-year males

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holding territories until I watched closely from blinds erected within the colonies, perhaps their failure to see this is a byproduct of their observing from a distance.

Sex ratios are difficult to determine accurately in dense colonies, but my observations and those of Gerald Collier suggest that normally there are only two females per male, rarely more. In many cases there is only one nest constructed in an area defended by one male. To determine the breeding sex ratio requires hundreds of marked birds, something which no one has yet achieved. Lack & Emlen (1939) closely observed three males, one of which had two females, the other two had three, but little can be said from such a small sample. They also estimated a ratio of 47 ♂♂ : 100 ♀♀ in birds coming in to feed the young. Even assuming this estimate was accurate, it cannot be interpreted definitely until the relative feeding rates of males and females are known. Estimates are also complicated by the presence, for short periods of time, of more females within the territory of one male than actually complete nests. The mechanisms by which the sex ratio in a colony is determined are unknown. Females are not aggressive toward each other as female Redwings are, but the possibility of subtle behavioral interactions between females cannot be excluded because they do have a special call which is given when approaching and leaving the nest.

Nests are built by the females only. Although males often manipulate nest material in nest-site demonstration displays, I have only once seen a male carry nest material any distance. The nest normally is completed in four days or less. Materials used are similar to those utilized by the Redwing but Tricolors usually line the nest with green grass while Redwings use dry grass. Most of the material for the nest is gathered on the marsh, but at the lining stage the females may travel for some distance to a good grassy area to gather the fine green lining material.

Incubation is performed by the females alone. The males leave the marsh during the day at this time, returning at night to roost, but not necessarily roosting on their territories or even within the confines of the colony. Incubation takes 11-12 days (Emlen 1941. Confirmed by my studies). During the incubation period, the females take long feeding flights several times each day, there always being a mass exodus the first thing in the morning and then again late in the afternoon. At the East Park Reservoir on May 1, 1959, there was a mass exodus of females at 0515, the first birds returning at 0607. During the rest of the day small groups regularly flew back and forth from the marsh to the feeding areas. In the afternoon I watched a flock of 200-300 feeding in chamise about one mile northeast of the colony. The flock remained approximately the same size for over an hour but during that time its membership changed several times as new birds joined the flock and others left it and returned to their nests. The unity of the feeding group was maintained because outgoing birds followed the paths of returning birds.

Clutch Size. Estimates of clutch size may easily be made by walking through the colony during the incubation period. Because of inevitable losses prior to the time of counting, such estimates represent the minimum clutch size. For example, Paynter (1941) found an average clutch size of 2.38 in the Herring Gull (*Larus argentatus*) whereas histologic examination of the ovaries shows that invariably three eggs are ovulated (Davis 1942). During this study I made clutch size determinations at six colonies. Omitting rare clutches of 1, which are almost certainly incomplete, estimates ranged from 3.01 to 3.44 (Table 17). It is of interest that all three 1960 determinations are larger than the 1959 ones. Emlen (1941) found a mean clutch size of 3.6 eggs in 141 nests, a value larger than any I found, but the data are not sufficient to establish annual variations in clutch size. Autumnal clutch size was similar to that of spring (Orians 1960). Clutches of 5 or more may represent contributions from more than one female, but they are so infrequent that they do not appreciably influence mean values.

TABLE 17. Clutch-size in the Tricolored Blackbird.*

Locality	Date	No. of Eggs per Clutch					Mean clutch size
		2	3	4	5	6	
North Colony, E. Park Res.	4/29/59	5	34	23	—	—	3.29
Main Colony, E. Park Res.	5/ 2/59	32	99	34	—	—	3.01
Main Colony, E. Park Res.	5/29/60	12	93	97	2	—	3.44
Haskell Ranch	5/13/59	164	715	259	2	1	3.09
Haskell Ranch	4/27/60	13	77	56	—	—	3.33
Marysville	5/20/59	56	147	89	—	—	3.11
Marysville	5/ 8/60	7	78	74	—	—	3.42

* *Note*: rare clutches of 1 are omitted.

Nesting Success. During my studies I have observed nest failures of three main types. At the Marysville colony on May 30, 1959, when the oldest young were about 10 days old, I visited hundreds of nests. In only three nests were there three young older than one week, and in each of these nests one of the nestlings was considerably smaller than the other two. Even in nests with only two young one week old or older, one was normally a runt. There were hundreds of dead young beneath the nests. Neff (1937) also reported the death of many of the smallest of the nestlings, finding that this percentage was greater later in the season than earlier. He attributed this to the great heat of the marshes in June which caused incubation to be therefore less synchronous. Since feeding conditions are probably poorer later in the season, the youngest nestlings might have died of starvation whether or not hatching was asynchronous. Starvation of nestlings was also widespread in the autumnal colonies (Orians 1960).

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A second form of nest failure is desertion. At the East Park Reservoir in 1959, mass desertion began on May 2. At that time I found only 188 nests with warm eggs out of 491 nests checked. Two Scrub Jays (*Aphelocoma coerulescens*) were seen flying from the colony with eggs in their bills, but they could not have accounted for more than a fraction of the eggs destroyed and were most likely taking already deserted eggs. By May 7, there were no more than 15 active nests where there had been over 1,000 one week earlier. On May 15, only eight females were feeding young. Neff (1937) also noted a number of colonies which deserted full clutches of eggs with no obvious cause. He also noted desertions resulting from wind damage to the cattails. At the East Park Reservoir there was no such disturbance, and nests and eggs were intact when deserted. Mass desertion also occurs in other colonial species (Brown 1958).

The spring of 1959 was unusually dry. Less than one inch of rain fell in April and only a trace in May. Consequently, the growth of annual grasses around the reservoir was exceedingly poor, and by mid-April the hills were already turning brown. No measurements of insect populations were made but they were surely far below normal. Possibly the birds made an assessment of the food available in the surrounding feeding areas by means of the feeding flights to be described, and nesting was abandoned because of the inadequacy of the food resources. Mass desertion of full clutches also occurred in the autumnal colonies in 1959, where it again could be correlated with inadequate food supplies in the surrounding areas. The reasons for believing that an abundant and readily available food supply is especially critical for colonial species will be dealt with later.

A third form of nest failure is loss to predators. I have not witnessed nest destruction in this species, but several colonies have been destroyed within a few days. In 1959, a small colony at the East Park Reservoir north of the main marsh was destroyed at the same time the main colony deserted. On May 7 all the nests were intact but empty. In 1960 both the Haskell Ranch colony and the Marysville colony were destroyed. Bits of eggshell or yolk stains were found in some of the nests, but in most of them there was no sign of disturbance. Mass destruction of nests has also been reported by Mailliard (1900), Neff (1937) and Lack & Emlen (1939). Various predators have been accused, among them snakes, hawks, owls, crows, mink and raccoons. I have seen both Scrub Jays and Yellow-billed Magpies (*Pica nuttalli*) taking eggs from colonies, but the number of birds present could have taken but a small fraction of the eggs and young lost. It is more likely to have been snakes (*Thamnophis* and *Pituophis*), which are able to climb cattails to the nests, are common in the marshes at this time of year, and have been seen robbing Redwing nests.

Feeding Behavior of Adults. Food and feeding of adult Tricolors appears, without examination of stomach contents, to be similar to that of the Redwing, but their social organization results in their feeding in different areas even when the two species are nesting in the same marsh. A flock of Tricolors feeding in a grassland or other uniform place progresses by the flight of the rear birds over the rest of the flock to the front. A given individual usually spends 25-40 seconds in one spot before flying to the front of the flock. Thus, the flock smoothly progresses across the ground even though its individual members move only twice per minute. In rice fields and flooded pastures no such uniform pattern of flock movement is possible and individuals move more at random with respect to each other.

Colony-size Limitation. Evidence has been presented for the Redwing indicating that territorial behavior limits the density of the breeding population. In the Tricolored Blackbird, territory size varies little from colony to colony unless the vegetation prevents the nests from being as close together as they normally are in undisturbed cattails. Furthermore, except in rare instances, the total nesting space is only partly utilized by the colony, so that territorial behavior would be ineffective in preventing additional birds from settling to breed. Nevertheless, when enormous numbers of individuals must be fed from a fixed spot, the relationship between colony size and food supply is critical because a colony too large for the surrounding environmental resources might be a complete failure. Certain evidence strongly indicates that there is some mechanism of colony-size adjustment, although its details are yet to be determined.

Firstly, colony size is correlated with the suitability of the surrounding environment. In the grazing lands of the foothills I have never found colonies larger than a few thousand nests. The agricultural country of the valley supports larger colonies, the largest being in the rice-growing areas where rich insect supplies are produced in the shallow water (Table 18).

TABLE 18. Tricolored Blackbird colony sizes.

Habitat type	Number of Colonies With		
	<1,000 nests	1,000-10,000 nests	>10,000 nests
Foothills	7	2	1
Valley cropland (no rice)	3	2	3
Rice country	0	3	7

Secondly, territorial challenges are frequent during the colony-establishment period. Territories are often taken over by a new male while the resident is absent for a few minutes feeding, but such intruders are quickly expelled by the owners when they return. At any time during the colony-establishment period there are many unsettled birds which continually move back and forth over the colony looking for unoccupied territories. In fact, from a distance it appears that most birds are wandering aimlessly

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through the colony area. Actually, the established males are all singing and displaying low in the vegetation, and the movements are almost entirely composed of unestablished birds. This is not correlated with availability of territory sites because it is equally true whether there is a shortage of nest sites or whether only a small portion of the marsh is occupied. Apparently intruders attempt only to substitute themselves for already established birds rather than to increase the colony size.

Thirdly, in all colonies observed at the time of territory establishment, the number of birds present was always greatly in excess of the number which actually remained to breed. At the East Park Reservoir in 1959, about twice as many birds were present the first few days as bred. At the Haskell Ranch in 1959, about three or four times as many birds as nested were present the first few days. Some of this overflow may have moved to the Marysville Colony about eight miles to the northeast, but even here the colony at its maximum extended nearly one-fourth mile farther along the drainage channel than the limit of actual nests. In none of these cases was there a shortage of nesting sites.

The evidence suggests that during the first few days of colony establishment an assessment is made of the food supply available in the surrounding environment by means of mass feeding flights. During this period the birds make what appears to be an excessive number of feeding trips to the surrounding country, and by watching from a blind it can be determined that unestablished birds make far more trips than established ones. These mass feeding flights form the most conspicuous activity around colonies at this time. At the East Park Reservoir in 1959, I observed 17 mass feeding flights, involving most of the birds in the colony, in 6.5 hrs on April 20, the day the colony started. On April 21 I observed 14 such flights in 4.75 hrs and on April 22, 5 in 2.25 hrs. This yields an average of 2.7 flights per hour. It seems unlikely that such a rate of feeding is necessary for the adults merely to gather the amount of food they need.

This is simply a special case of the general phenomenon of environmental evaluation among birds. Many species are known to adjust their clutch sizes and/or territory sizes to food supply of the environment, and it is well known that colony size in many colonial species is in some way adjusted to the capacities of the environment to support breeding (see references in Lack 1954). Such an adjustment could be made in the Tricolored Blackbird through the mass feeding flights.

Data for the Redwing and Tricolored Blackbird relative to spacing can be summarized as follows. In the Redwing, territorial behavior strongly limits density, forcing part of the population into less suitable areas and probably totally preventing some individuals from breeding. Fighting over territories begins early and is most severe in areas where territory size is ultimately the smallest. Variability is related to habitat in two ways: (1) The nature of the nesting vegetation may influence territory size, as was shown following burning. Under undisturbed conditions, however, this is likely to be of minor importance. (2) More important is the nature of the surrounding feeding grounds. Territories are largest where most of the food is obtained on them and smallest where the least food is obtained on them. Territory size is unrelated to the number of females building nests within it, nor is it related to the action of known predators, though this point is less certain.

In the Tricolored Blackbird, territories are uniformly small unless the vegetation is not dense enough to permit such a high concentration of nests. Territorial behavior does not limit density. Instead, the important variable, colony size, changes with environmental conditions, being smallest in the grazing and dry farming areas and largest in the rice growing areas. There is suggestive evidence of a mechanism of colony size limitation.

Therefore, whereas in neither species is there a "food territory" in the classical sense, the spacing within the systems is intimately related to the exploitation of the environment, and the known patterns of variability in territory size can be attributed primarily to it. More data will be needed to clarify the roles of other factors.

TIME AND ENERGY BUDGETS

The amount of time and energy which a bird devotes to different activities must inevitably influence its survival and reproductive rates. It follows that there exists for a species in a given environment an optimal time and energy budget. It is of particular theoretical interest to investigate the conditions influential in determining the relative significance of different patterns of time and energy budgeting (Hutchinson 1957, Fisher 1958:47). The general evolutionary trend has been to reduce both the number of gametes produced and the amount of energy devoted to their production. At the same time there have been increases in the energy content per female gamete, and the time and energy devoted to the care of those few offspring produced. It is not surprising that these trends are correlated since giving extended care to offspring is incompatible with producing enormous numbers of them, and production of large gametes is incompatible with production of large numbers of them. Beyond these obvious trends, however, there are many unstudied variations in the time and energy budgets of species producing similar numbers of gametes of approximately equal energy contents.

There are three major ways in which a species can modify its expenditure of time and energy. Firstly, the total energy expenditure may remain approximately the same but its distribution among different activities varied. Secondly, the total energy budget may be increased, and thirdly, it may be decreased. The amount of time spent on reproductive activities may vary in like manner. It is the purpose of this section to present quantitative estimates of

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time and energy expenditures in the Redwing and Tricolored Blackbird.

These estimates are of necessity rather crude. Firstly, the lack of adequate physiological data forces me to make assumptions about the energy demands of certain activities which may not be highly accurate. Secondly, the field data are based upon only a few individuals, whereas observations in other areas have shown that the pattern varies geographically. No previous attempt has been made to establish the budgeting of time and energy in natural populations, but Pearson (1954) made an estimate of the daily energy requirement of an Anna Hummingbird (*Calypte anna*). Hence, in spite of the various difficulties involved, crude attempts will nevertheless be ventured because the differences between the two species of blackbirds are so striking and because of their theoretical importance.

Ideally, one should present estimates of the entire annual time and energy budgets but the data do not justify such extended treatment and nonbreeding differences appear to be minor. Instead, I have limited the comparison to those features in which the two species differ most strikingly, namely territorial defense and feeding of the young. The slight differences in the time and energy devoted to nest building and egg laying are ignored. These restrictions serve to concentrate attention upon the major differences, in terms of energetics, between the two social systems, preparing the way for a discussion of the evolution of these differences. Since no attempt is made to quantify the entire time and energy budget, it is impossible to express any time and energy expenditures as fractions of the whole. I have therefore expressed them as percentages of energy increase above the resting metabolic level, or as additional hours of time expenditure, as the case may be.

My most complete information on the Redwing is based upon several males studied intensively at Jewel Lake in 1958. During February the males spent about fifteen minutes on the marsh in the morning, defending their territories, after the departure of the main roosting flock. They then left for the day, returning in the evening shortly before the main roosting flock at which time they also engaged in territorial behavior. In March, the time spent on the marsh gradually increased to about 3.5 hrs in the morning, but the evening arrival time did not appreciably change. On the average, about two extra hours were spent on the territories during this month. By the end of the first week of April the birds remained all day and nesting was soon underway. This pattern continued for about two months until nesting was completed, after which the birds again left the area.

Once the males remained all day, about ¾ of their time was spent on the territory; the rest on nearby feeding grounds. From my notes I have determined that about ¼ of the time spent on the territory was occupied with actual defense of the territory, either by means of vocalizations and displays or through actual chasing and combat (see later).

As females are much more difficult to watch, I do not have comparable quantitative data, but they spend much less time in territory defense than males, and the period of time during which they do so is shorter. Territory defense at Jewel Lake lasted from mid-March until the hatching of the eggs, but during the incubation period the frequency of contacts between females was low as incubating birds stirred from their eggs only when new females arrived on the area. During the period of active territorial defense, I estimated that about ⅛ of the female's time is so spent.

Once the young hatch, the pattern of activity suddenly changes for the females, but not for the males, which continue much as before. On the average, a female visits the nest at least once every fifteen minutes with food. Most of her time is spent among

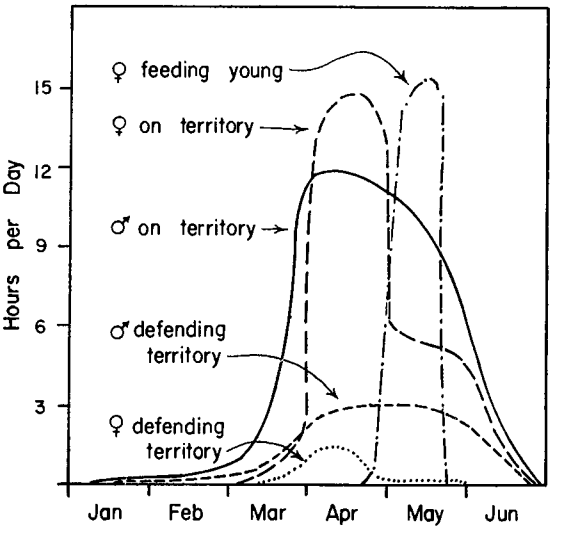

FIG. 20. Time and expenditure during the breeding season by a typical pair of Redwings.

the grass searching for food, only about 1.5% of it being required for flying to and from the nest. The remainder of time is devoted to feeding herself, preening, and resting. An estimate of the time expenditure of a typical male and female Redwing is summarized in Fig. 20.

In the Tricolored Blackbird, the pattern is strikingly different. Prior to the start of nesting almost no time is devoted to activities concerned with breeding, but activity is intense as soon as the colony forms. Since continued observations of individuals in these colonies is so difficult, estimates are based upon group behavior, supplemented by observations of individuals from a blind. Males devote about ½ of their time to territory establishment and defense during that one week period when nests are built and eggs laid. Thereafter, such activity ceases for the remainder of the breeding period. Since nests are started the first day, females spend almost no

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time in aggressive behavior. Once the eggs are laid, all territorial behavior on the part of all birds stops.

During the colony-establishment period considerable energy is devoted to the conspicuous mass feeding flights. About 26 minutes of every hour were devoted to feeding flights, a portion of which apparently forms a part of the environmental assessment of the breeding birds.

During the nestling period, both sexes actively bring food to the young, but in contrast to the Redwing, the major expenditure is in flying from the nest to the feeding area and back again. Since areas up to four miles from the nest are utilized when feeding the young, virtually half of the adults' time must be spent in flight, leaving much less time for gathering food than is available to the Redwing. If as much time were spent on foot by Tricolors, the rate at which food could be delivered would be greatly reduced, and the reproductive rate lower, although this is partially offset by male participation in feeding of the young. Since the clutch size of the Tricolor is only slightly less than that of the Redwing, it is apparent that searching time has been reduced substantially. An estimate of the time expenditure of a typical male and female Tricolor is given in Fig. 21.

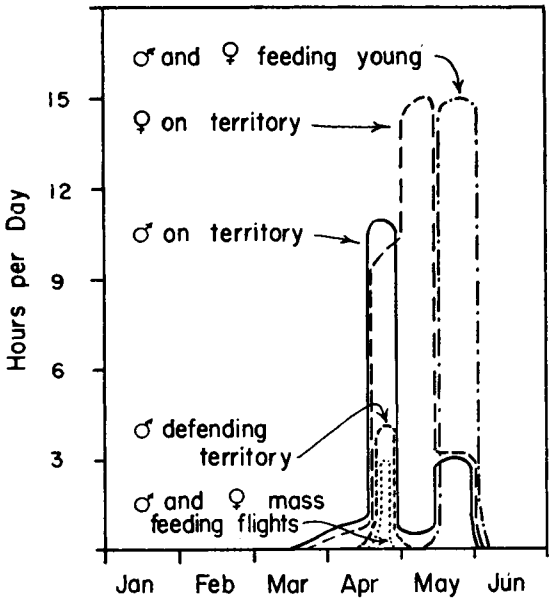

FIG. 21. Time expenditure during the breeding season by a typical pair of Tricolored Blackbirds.

Knowing the frequency of occurrence of different behavioral patterns during the nesting cycle, it is possible to calculate the energetic drain incurred by individuals of the two species. I am assuming that the physiology of avian protoplasm is similar to mammalian, an assumption supported by recent work of James R. King (pers. comm.). Estimates are based upon data given in Brody's book (1945) and Pearson's (1950) work on hummingbirds. Behavior concerned with territorial defense may be divided into three categories: vocalizations, displays, and chasing and combat. The first two are energetically much more efficient means of accomplishing the objective and are consequently prominent in avian territorial behavior. For the purposes of calculation I assume that the energy required to produce song and other vocalizations raises the metabolic level of the bird 10 per cent above its resting level. This is equivalent to the additional energy required for standing as opposed to lying in man and several domestic animals (Brody 1945). Displays are assumed to double the metabolic rate much as walking does for man. Flight is assumed to require five times as much energy as resting, as found by Pearson for hummingbirds. Even if the flight of other birds is found to require an increase in energy less than that incurred by hummingbirds, the general picture obtained here will not be seriously altered.

Approximately six vocalizations per minute were given by male Redwings on their territories at Jewel Lake. Of these, five, mostly songs, were directly concerned with territory. Since the average duration of a song is slightly less than 1.5 seconds, about seven seconds per minute were devoted to this activity. Three displays concerned with territory were given per minute, averaging two seconds each, for a total of six seconds per minute. Flights and fights occupied about 1.5 seconds per minute. Thus, as mentioned earlier, ¼ of the bird's time is devoted to activities of territorial maintenance. Calorie-wise, the vocalizations require an increase of 0.7% in energy expenditure, the displays an increase of 5% and the flights and fights another increase of 5%, for a total increase of 10.7%. Furthermore, this 10.7% additional energy must be obtained in ¾ the time otherwise available for this purpose, and time available for other activities is correspondingly reduced. Since the male takes no part in feeding the young, his reproductive energy expense is restricted to this category until the young leave the nest.

In females the duration of territorial defense is only about one-half that of the males, and all forms of territorial behavior are indulged in less frequently, especially chasing and fighting. I have used an energy increase of 5% as an approximation of female territorial energy expenditure. However, once the young hatch, female time and energy expenditure changes radically. Assuming that walking on foot searching for food doubles the metabolic rate of the bird, the energy increase of females is about 157.5% above the resting level, about 150% of this coming via the search on foot and the remainder in flight between the nest and the nearby feeding grounds (Fig. 22).

In the Tricolor, the energy devoted to territorial defense and maintenance is greatly reduced in both sexes. All such activity takes place within the period of one week, and no energy is devoted to it during the incubation and nestling periods by either sex. Using mass behavior observations I have estimated that for one week, male Tricolors are at least twice as active

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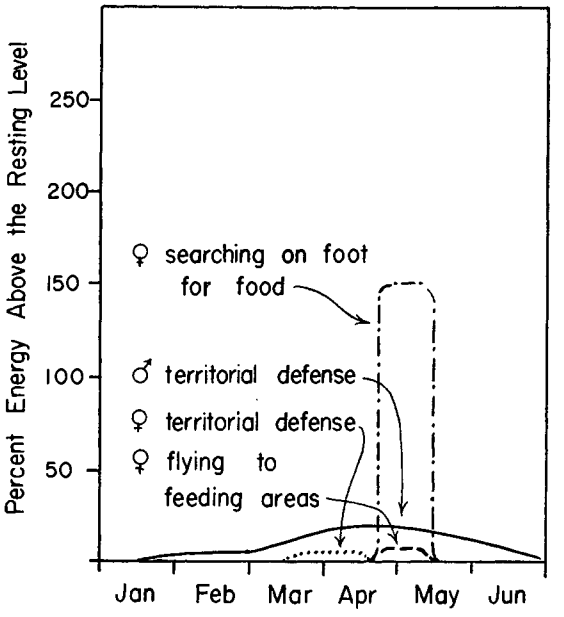

FIG. 22. Energy expenditure during the breeding season by a typical pair of Redwings.

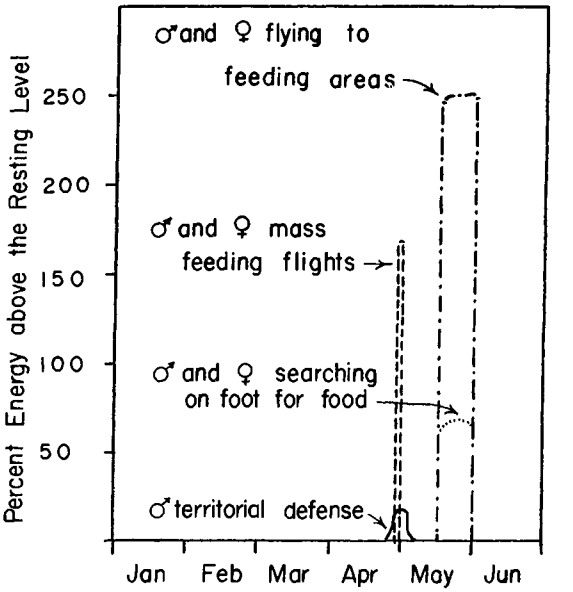

FIG. 23. Energy expenditure during the breeding season by a typical pair of Tricolored Blackbirds.

in territorial defense as male Redwings, but that females are much less so than female Redwings. To this estimate must be added the energy expense of mass feeding flights, one half of which will be assumed to be in excess of that merely needed to sustain the adults.

The major energy expenditure accompanies feeding the young because of the great distances flown. Using the calculations of time spent flying and walking given in Fig. 21, it can be concluded that the energy increase totals about 317%, 250% of which is expended in flying and 67% in walking, just the reverse of that found in the Redwing. The other contrast is that both sexes are involved. Energy expenditure is estimated in Fig. 23 for a typical male and female.

In determining the total energy requirements of a social system it is important to consider not only the energy demands of the activity, but also the duration of that demand. In comparing the two systems I have therefore expressed the energy expenditure, firstly, in terms of the period during which it occurs and, secondly, in terms of the total energy increase for the year (Table 19).

Clearly the colonial system of the Tricolor is more demanding of energy but less demanding of time than the territorial system of the Redwing. This is due to the fact that most time-consuming events are energetically less demanding than events compacted into short periods of time. Since the colonial system of the Tricolor is energetically more expensive, the species would stabilize at a lower population level, other things being equal (Slobodkin 1953). However, it is probable that the system evolved because it made other things unequal, and that the population level was increased by the adoption of the nomadic colonial system under the particular conditions to which it has been exposed during its history (see later).

Because of the high rate of food gathering, the Tricolor colonial system demands more favorable environmental conditions in which to operate than the Redwing territorial system. These more exacting requirements may help to explain the peculiarly spotty distribution of the species during the breeding season. A detailed study of food supplies available in different feeding areas, in relationship to their distance from the nests and the frequency of their utilization, would be most rewarding.

One of the major differences between the species is the early occupation of territories by male Redwings. Since testis maintenance is probably energetically cheap, only a very slight advantage for the males to be in reproductive condition early is needed to offset the energy loss incurred through the long-term maintenance of functional gonads. The advantages of early testis maturation are (a) early occupation of territories with the attendant advantages of prior residency, (b) the advantage gained by being able to mate with the first females to come into breeding condition (Fisher 1958), and (c) the ability to inseminate females whenever the opportunity arises. The relative importance of these factors varies with the particular mating system employed by the species and the ecology of the area. In many regions early occupancy of territories by the males is prevented by ecological unsuitability of the nesting area prior to the time of nesting.

In contrast, since the maturation of ovaries and the production of eggs is energetically very expensive, selection can be assumed to favor such metabolic exertion when and only when the chances for success-

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TABLE 19. Comparative social system energy expenditure (expressed as % increase above the resting metabolic level).

Activity	Redwing						Tricolored Blackbird					
	Duration		Energy increase %		Total energy increase %/yr.		Duration		Energy increase %		Total energy increase %/yr.	
	M	F	M	F	M	F	M	F	M	F	M	F
Territory defense	10 wks	5 wks	10.7	5.0	2.2	0.5	1 wk	1 wk	13.0	1.0	.25	.02
Mass feeding flights	—	—	—	—	—	—	4 days	4 days	165	165	1.8	1.8
Feeding young	2 wks	2 wks	T	157.5	T	7.8	2 wks	2 wks	317	317	12.6	12.6
(flight to feeding area)	—	—	—	(7.5)	—	(0.3)	—	—	(250)	(250)	(10)	(10)
(search on foot)	—	—	—	(150)	—	(7.5)	—	—	(67)	(67)	(2.6)	(2.6)
Total			10.7	162.5	2.2	8.3			330	318	14.65	14.42

Note: Duration of territory defense in the male Redwing may last up to 20 weeks but for part of this time the territory is occupied morning and evening only. The figure of 10 weeks represents an amount of time roughly equivalent to the total hours of full-time occupation.

ful breeding follow with a high probability. Furthermore, early breeding does not carry selective advantage for the female as it does for the male because the modal breeding time is necessarily the most advantageous if the breeding period is to stabilize, as it does. Hence, females are at a selective advantage if they come into breeding condition only upon arrival at a suitable breeding area where environmental conditions are favorable and a male is present. Thus, we should expect the female gonadal cycle to lag behind that of the male and the stimulatory effects of the male upon ovarian maturation to be strong, and this is the case.

Viewed in this light, the early occupation of territories by male Redwings in California, where winters are mild and the species is non-migratory, is reasonable, but male Tricolors fail to occupy territories prior to the time of breeding under the same environmental conditions. One of the requirements for adaptation to nomadism, the need for rapid response to suitable environmental conditions whenever and wherever they are encountered, leads to close group synchrony. Since the time and place of suitable breeding sites are unpredictable for nomads, no advantage can be gained through attempted occupation of sites in advance of the main group of birds. Instead, close flock organization at all times is most advantageous and the male's chances of leaving offspring are greatest if he remains with the group.

THE EVOLUTION OF MATING SYSTEMS

In most species of birds for which there is information, the sex ratio among nestlings is equal (Mayr 1939, Lack 1954:10), and there are important theoretical reasons for believing that the primary sex ratio should be close to 50:50. Fisher (1958) has argued that natural selection will tend to equalize parental expenditure devoted to the production of offspring of the two sexes, and Kolman (1960) has expanded the theory to show how this fixes the sex ratio but not the variance. As yet there has been no experimental confirmation of this hypothesis, but experiments with house mice are currently underway at the University of Pennsylvania. If, however, we assume that Fisher is correct, there will be equal numbers of male and female blackbirds at the time they become independent of their parents, as found by Williams (1940). McIlhenny (1940), however, reported a sex ratio of 77% ♂♂ : 23% ♀♀ in Redwings from Louisiana, sexed at the age of five days in nests from which all young were known to have survived to the day of sexing. He did not state how he sexed the individuals, however, and Selander (1960) has since found that the sex ratio in Boat-tailed Grackles does not differ significantly from 50:50, though McIlhenny claimed to have found 30% males and 70% females. Selander concluded that McIlhenny sexed the nestlings on the basis of size only, and that his determinations are not trustworthy. Williams (1940) sexed 119 young Redwings, representing the full egg complements of 35 nests, finding 57 ♂♂ and 62 ♀♀. Among 94 young which successfully fledged the sex ratio was even. Hence, there are no reliable data which would suggest that the primary sex ratio in Redwings deviates significantly from equality, nor is there any reason to expect significant differences in the mortality rates of the two sexes during the nestling period. Once the adult plumage is attained, males might be expected to have higher mortality rates, but this does not influence the evolution of the primary sex ratio (Fisher 1958).

Unfortunately, there exist no satisfactory data on the sex ratio of adult Redwings or Tricolors. For much of the year sexes segregate in the Redwing, so that random field counts are worthless. Only at the time of breeding can the sex ratio be accurately determined, and this tells nothing about the sex ratio in the non-breeding segment of the population. Normally, the sex ratio among breeders has been assumed to be the same as in the population as a whole of breeding age but this is not likely to be true. The interesting data of Williams (1952) on the Brewer Blackbird demonstrate that this simple answer is insufficient.

It is well known that in many monogamous species occasional polygamous matings occur. Let us assume, then, that in many species there is a certain proportion of males having a genotype which makes it pos-

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sible for them to have two mates. If, by having more than one mate, the male can produce more young than if he had just one mate, selection will always occur in favor of polygamy. Justin Frost has pointed out to me that the system is self-accelerating once it has started, so that once some polygamy has been established, fewer and fewer offspring are required per female mate from polygamous males to keep the selection going. This is true no matter how the mechanism is inherited and no matter what the sex ratio in the population as a whole. Thus, one can equally well ask why monogamy is so prevalent as why some species are polygamous. In view of this, and the theoretical likelihood of equal numbers of both sexes at the time of achieving independence, it is unnecessary to consider polygamy as the byproduct of unbalanced sex ratios in the population as a whole, or as the by-product of a slower maturation rate of one sex.

In addition to the advantage conferred upon males having more than one mate, polygamy may be fostered by the advantage of having fewer males present on the breeding grounds to consume valuable resources (Pitelka 1959). In many species, particularly herbivorous mammals and precocial birds, the value of the male may be limited, if not non-existent, once fertilization has taken place. It is noteworthy that monogamy is rare among herbivorous mammals where the male is physiologically incapable of contributing to the nutrition of the young.

Counteracting this tendency toward promiscuity are other factors which must be operating in most species to maintain monogamy in the face of strong selective pressure against it. In species, such as carnivorous mammals and most birds, in which the male is able to make a significant contribution to the care of the offspring, a given male may not be able to leave more offspring by mating with more than one female if he is thereby unable to contribute as much to the care and feeding of these offspring. Moreover, it would be of advantage to the female to retain a male for herself since his contribution must increase her reproductive success. Behavioral patterns on the part of the female which have as their function the expulsion of other females from the territory of the male will thus be expected to evolve. Such behavior is well developed in female Redwings. Furthermore, if polygamy has, as a by-product, failure of many mature males to contribute any genes to future generations, there will be strong pressure from these excluded individuals to be admitted to the breeding group. Thus, those males attempting to defend more than one mate will find themselves under increased pressure from other males, a pressure which will be increased the more out of phase his females are, and, hence, the longer period of time they are available for fertilization by another male. Having more than one female will be of no selective advantage to a male if other males successfully inseminate them. Presumably, the stabilized sex ratio observed is the outcome of the interaction between these and perhaps other, as yet unknown, factors. How they will act to stabilize the system must depend upon the basic ecology of the species and the features of its social system but this has not been investigated in any species.

In species where the male is incapable of contributing much to the welfare of the young, as in many male mammals, the evolution of his role is more easily understood than in such species as blackbirds where this is not the case. In many closely related species, such as meadowlarks and orioles, the males actively feed the nestlings and the Redwing and Tricolor differ markedly in this respect. Since, as will be developed later, the Tricolor is probably an offshoot from the Redwing, the main problem is to determine why the male Redwing lost his role in feeding the young, and why the Tricolor has subsequently regained it. At present there seems to be no satisfactory answer, but certain lines of approach can be suggested.

Polygamy in passerines is characteristic of species occuping habitats in which feeding areas are widespread but nesting sites are restricted. For example, it occurs widely in the ecologically similar savannah-inhabiting ploceids, sturnids and icterids. This is correlated with the evolution of slower maturation rates on the part of the males so that males of some of these species do not breed until they are two years old though females do so when one year old (Friedmann 1949). This type of ecological situation may be very important in shifting the balance in favor of polygamy in species in which the males probably fed the young at the time polygamy was initiated, and may continue to do so. Once polygamy is established, the loss of feeding of the young by the males probably follows in many cases because of the time needed to insure fertilization of all the females, and the importance of extended territory defense when several asynchronous females are present.

The development of sexual dimorphism follows polygamy and promiscuity among icterids (Selander 1959). There must have been an initial advantage enjoyed by the males having a slight development of secondary sexual characteristics so that there was something upon which female selection could have operated (Fisher 1958). As in the development of polygamy, the speed of development of sexual characters is a self-accelerating system which will progress geometrically until it encounters counterselection in the form of an increased mortality rate of the more excessively ornamented males, or their reduced efficiency in caring for their offspring.

The evolution of slow maturation rates in the males poses an even more difficult problem, since such individuals have a much reduced intrinsic rate of natural increase (Cole 1954). In fact, if a male Redwing produces ten offspring per year and no mortality is assumed, the potential production of offspring in four years is reduced from 14,540 for a male beginning to reproduce at the age of one year, to 130 for a male beginning to reproduce at the age of two years. Nonetheless, such a male must leave

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more surviving offspring during the period when he is replacing a more rapidly maturing genotype if his genotype is to have selective advantage over one with a faster maturation rate (MacArthur 1960). Slow maturation rates in birds are not correlated with the size of the bird but are characteristic of species in which breeding sites are limited. Probably these are all species which are very ineffectively controlled between breeding seasons so that surplusses of breeding birds are regularly present. Shortage of resources must inevitably be necessary to cause the replacement of rapidly maturing genotypes by more slowly maturing ones, but the exact mechanisms are yet to be worked out.

In the Redwing, the sex ratio of 2-3 ♀♀ per ♂ in the breeding populations studied probably does not reflect the sex ratio in the population as a whole, though the number of males of breeding age is certainly less than the number of females since the males do not breed until they are two years old. The present balance is probably maintained because the advantages to the males of more extreme polygamy are counteracted by the problem of defending successfully a larger territory and preventing stolen copulations as the number of females increases. The females, by defending territories within the territory of the male, exert an active role in determining the number of females able to breed there.

In the Tricolored Blackbird, the situation is quite different because neither sex defends much of an area nor devotes much time to it. The sex ratio here probably mirrors the actual population sex ratio more closely than in the Redwing. With the development of extreme coloniality and the utilization of distant feeding grounds, strong selective pressure in favor of male participation in feeding the young has apparently caused an evolution back toward a more monogamous situation and more equal division of labor between the sexes. However, the tentative nature of these conclusions serves to stress our ignorance about the factors responsible for the evolution of mating systems and maturation rates.

THE EVOLUTION OF BLACKBIRD SOCIAL SYSTEMS

Since no fossil evidence can reveal the nature of social systems in the past, their evolution will probably never be worked out. Nonetheless, certain clues from present-day operation of the systems can be used to suggest conditions likely to have influenced their evolution. Furthermore, in the case of the Redwing and Tricolor, their great morphological similarity leaves little doubt that they are closely related and hence monophyletic. Therefore, the pancontinental Redwing population was probably divided into two isolated groups, one of which evolved into the present day Tricolored Blackbird. In view of the uniformity of the social system of the Redwing throughout its wide range today and the fact that this system is closer to the normal form of organization among passerines, it is probable that the social system at the time of separation was similar to that of the Redwing today. Therefore, it is the evolution of a nomadic, colonial form of social organization from a more stable, territorial one which calls for explanation.

Today the Tricolored Blackbird is most abundant as a breeding species within the confines of the Great Valley of California where its nomadism is also most pronounced. Breeding is unpredictable, both as to location and size of colonies. To support the food needs of colonies as large as 50,000-200,000 nests, large areas are exploited. Food is gathered chiefly in the shallow water of rice fields, irrigated pastures, ripening and cut grain, and annual grass pastures. The presence of abundant and easily available food is a prime requisite for a successful colony.

At the time of the arrival of European man, conditions in the Great Valley were radically different from today. Dense riparian growth followed all the major watercourses, and on either side of the major rivers were extensive marshes and alkali flats. Prairies and oak parklands covered large areas between the rivers. None of these vegetation types remain today over significant areas and European annual grasses have almost completely replaced the native perennials. Gone, also, are the great numbers of locusts which characterized the grasslands of the valley. Since locusts formed an important item of food for most of the Indians of the Great Valley and surrounding foothills (G. M. Christmas, MS), plagues must have been a regular feature of these areas. It is probable that the locusts also formed the staple food for breeding colonies of Tricolored Blackbirds, as they do today for nomadic, colonial starlings in Asia and Africa (Schenk 1929, 1934, Serebrennikov 1931, Roberts 1940). In the steppes of Asia, locusts are also a staple food for gulls, many species of shorebirds and ducks during the breeding season (Formosov 1937).

Nomadic, colonial social organization in birds evolves most frequently in semi-arid regions of great climatic fluctuations. It is rare in North American birds, but in Australia, for example, 26% of breeding species are nomadic (Keast 1959). For the marsh-nesting Tricolor to evolve such a system, it is necessary that, in addition to unpredictability of breeding areas from year to year, there must be expanses of open feeding grounds surrounding the nesting areas and that these feeding grounds be characterized by an insect population which is very abundant for a short period of time. Without such conditions it is doubtful that the system could operate successfully.

Conditions of instability and broad expanses of open ground surrounding the marshes have probably been characteristic of the Great Valley of California since the early Pleistocene, if not earlier. Instability was produced by the annual winter flooding of large expanses of the valley (Fig. 24). The pattern of flooding and its severity, by changing from year to year, would produce different conditions each breeding season. What were suitable breeding marshes one year might be unsuitable the next and the time

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at which areas became suitable would be expected to vary greatly, depending upon the time that winter flood waters receded. Rainfall may have been much greater during the Pleistocene, but since the same trees which now grow in the San Francisco Bay region grew there throughout the glacial period (Chaney 1951), it may be assumed that the climate was still Mediterranean. Thus, the entire present-day

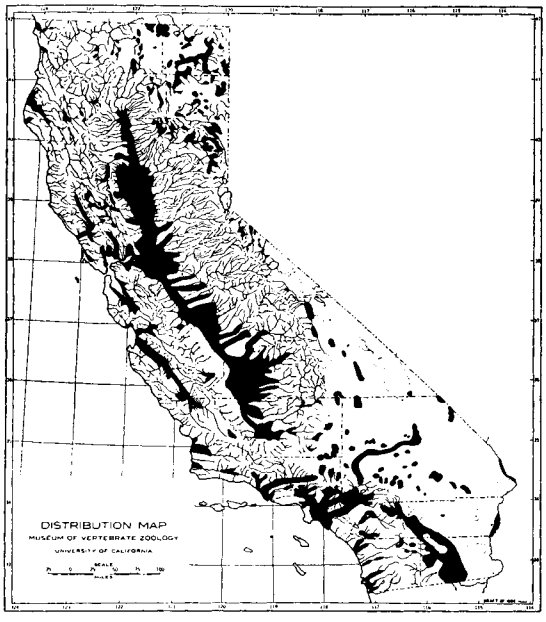

FIG. 24. Areas of California normally subjected to winter flooding.

range of the Tricolor has probably been subject to regular flooding and drying out for long periods of time.

To what extent conditions suitable for Tricolors were present in the Great Basin during the glacial period and earlier is not known. The presence of fossil floras containing species now restricted to California indicates that such conditions might have been more widespread well back into the Tertiary (Axelrod 1958) but the presence of certain plant species does not necessarily imply suitable conditions for year-round exploitation by a complex avian social system. In any case, if the Tricolor formerly had a more widespread distribution than it does today, its range had contracted to California before the arrival of European man in western North America.

A pre-Pleistocene origin for the Tricolored Blackbird is suggested by the distribution of past floras and by the good reproductive isolation of the species. Many species pairs in North America are thought to date from the Pleistocene, but in none of these cases is there extensive sympatry. Often there is considerable hybridization along the narrow zones of contact (Rand 1948). However, it might be argued that, in these cases, conditions during isolation were not different enough to have caused the development of sufficient ecological differences to permit coexistence. With the Redwing and Tricolor, on the other hand, the contrasting social systems, evolved in response to different environments, result in radically different patterns of environmental exploitation, and thus sympatry might have been achieved in spite of more recent separation.

Certain other evidence favors a more recent separation of the two species. In addition to their morphological similarity and the present day restriction of the Tricolor to California, there is reason to believe that conditions for isolation in California were excellent during the Pleistocene. Several other species pairs are thought to date from this period, e.g., California and Gambel quail (*Lophortyx californica* and *L. gambelii*) and Ladder-backed and Nuttall woodpeckers (*Dendrocopos scalaris* and *D. nuttallii*), and there are many more segregations at the subspecific level. Moreover, there is reason to believe that the grasslands of California have not been as effectively exploited by birds as other grassland areas in North America. There are fewer passerine species which are independent of trees during the breeding season than in any other grassland area (Table 20) so that a marsh-nesting bird might find it more profitable to range further afield in search of food than in areas with more highly developed avifaunas. Thus, though there is no conclusive evidence for choosing between a Pleistocene separation in California or an earlier one, there or elsewhere in western North America, it seems more likely, in the light of evidence now available, that the Tricolor evolved in California, whether early or late.

Today in the Great Valley dams and levees have virtually eliminated extensive winter flooding, most of the vast marshes have been drained, and the alkali flats and prairies are now under cultivation, so that it might be expected that the Tricolored Blackbird, its system no longer adapted to present-day conditions, would be in danger of extinction. Indeed, for a while this was feared to be the case (Neff 1937). However, the attributes of the social system which adapted it to former conditions have actually preadapted it to agriculture. For example, the major problem faced by birds utilizing cultivated land is that it is difficult or impossible to nest in many areas which contain rich food supplies. Grain is cut before nesting can be completed, crops are plowed, irrigated pastures are regularly flooded with enough water to drown ground nests, and rice fields are similarly excluded. But Tricolored Blackbirds, being able to concentrate enormous numbers of nests into small areas and to exploit distant feeding areas, are well adapted to utilizing these croplands. Not only this, but their method of communication of food supplies permits them to take advantage of the frequent changes in croplands which make food more readily available. Thus, the Tricolored Blackbird is not only in no danger of immediate extermination, but it is, in fact, one of the passerines best adapted to utilize the abundant supply of insects in agricultural

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TABLE 20. Breeding passerine birds of North American Grasslands (only those species independent of trees).

Californian Grassland	Southwest Desert Grassland	Great Basin Grassland	Great Plains Grassland
Horned Lark	Horned Lark	Horned Lark	Horned Lark
—	—	—	Sprague's Pipit
—	—	Bobolink	Bobolink
Western Meadowlark	Eastern Meadowlark	Western Meadowlark	Western Meadowlark
—	—	—	Dickcissel
—	—	—	Lark Bunting
—	—	Savannah Sparrow	Savannah Sparrow
Grasshopper Sparrow	Grasshopper Sparrow	Grasshopper Sparrow	Grasshopper Sparrow
—	—	—	Baird's Sparrow
—	—	Vesper Sparrow	Vesper Sparrow
—	—	—	Clay-colored Sparrow
—	Botteri's Sparrow	—	—
—	Cassin's Sparrow	—	—
—	—	—	McCown's Longspur
—	—	—	Chestnut-collared Longspur

lands of the valleys of California during the breeding season.

SUMMARY

The selective significance of various features of the social organization of the morphologically similar Red-winged and Tricolored blackbirds was studied in north-central California. Data were obtained primarily from simple observation but some field experiments were performed. Particular attention was paid to spatial and temporal aspects of social organization.

Whereas the Redwing breeds throughout most of temperate North America, the Tricolor is virtually restricted to the lowlands of California, but it is nomadic within its narrow range. Outside the breeding season both species are highly gregarious.

Male Redwings begin to establish territories in north-central California in early January, but until late March or early April the territories are occupied only in the early morning and late evening. Nest-building begins in early or mid-April at most sites; but females become out of phase with each other and nesting in any given marsh extends over long periods of time. Nesting habitats include emergent vegetation (particularly cattails), ditch banks, roadsides, fencerows, riparian vegetation, weed and brush patches, cropland, and occasionally upland stands of chaparral and grass. In cropland, however, most nests are destroyed by harvesting before fledging can be completed and reproductive success is poorer than in the marshes.

There is a general correlation between the size of Redwing territories and the proportion of food obtained within their confines, but food is probably not the proximate factor by which territory size is regulated. That territorial behavior strongly limits breeding density is suggested by (a) the frequency and severity of territorial challenges, (b) the regular occupation by newcomers of the territories of birds held for a few hours in a trap, and (c) the rapid and regular reoccupation throughout the breeding season of territories from which the occupants have been removed. Normally, first-year males do not maintain territories and breed but some may occupy areas from which the adults have been shot. Sex ratios among breeding birds are difficult to determine but on certain study areas there were 2.8-3.7 ♀♀ per ♂, with a range of 1 to 6. Usually the role of the male is confined to territorial defense and insemination of the females, but a few males occasionally or regularly feed the nestlings.

In contrast, territories are not established by male Tricolored blackbirds until the morning of the day breeding begins, and territories are only about 35 sq ft in area. Moreover, nesting is usually highly synchronous, all nests being constructed within the period of one week even in colonies as large as 50,000-100,000 nests. Some colonies, however, grow peripherally. As in the Redwing, most nests are placed in emergent vegetation but the birds also use grain, alfalfa, and safflower fields, mustard patches, ditchside vegetation, and occasionally trees. Breeding begins in April and May, being earliest in the foothills and latest in the rice growing country, in both cases being timed to optimal feeding conditions. To feed the enormous numbers of young involved, adults fly as far as four miles and more than 30 sq mi of land may be exploited by a single colony. The males actively feed the young but in other respects the mating system resembles that of the Redwing.

Sometimes colonies are completely destroyed by predators and at other times mass desertions, which may be related to poor food supplies, occur. Territorial behavior cannot limit the sizes of breeding colonies but several lines of evidence suggest that colony size is nonetheless adjusted to the capacities of the environment. Apparently an assessment of the environment is made during the period of colony establishment by means of mass feeding flights but the exact mechanism remains obscure. Thus, whereas in neither species is there a 'food territory' in the classical sense, the spacing within the systems as a whole is intimately related to environmental exploitation.

Combining assumptions regarding the energy demands of various activities and the tabulation of field data on activity sequences, tentative time and energy

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budgets for the two breeding systems are constructed. The colonial system of the Tricolor is more demanding of energy, because of the great energy expended in flight to distant feeding grounds but less demanding of time. Moreover, the colonial system is more exacting of high concentrations of food supplies which may help to explain the peculiarly spotty distribution of breeding colonies. The value of early occupation of territories by male Redwings is discussed.

Theoretical arguments and field data support the idea that the primary sex ratio in the polygamous Redwing is equality and it is shown that selection can easily favor polygamy despite equal sex ratios. Thus the evolution of polygamy cannot be viewed as the product of unbalanced sex ratios but must be considered on its own merits. Ecological factors favoring monogamy and polygamy are discussed and evaluated and it is concluded that the evolution of slow maturation rates in male blackbirds and other species must inevitably be related to the presence of surplus breeding populations.

The colonial system of the Tricolor probably evolved in California in response to the instability produced by regular winter flooding of its breeding range and the concentration of food provided by locust plagues. The time of separation from the pancontinental Redwing population is uncertain but it may be as recent as the Pleistocene. The features of the colonial social system of the Tricolored Blackbird which adapted it to former conditions have preadapted it for utilizing agricultural lands as well.

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VIA ELECTRONIC MAIL

May 28, 2015

Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
fgc@fgc.ca.gov

Re: Item #28; June 11, 2015 agenda; Consideration of petition, Department's report, and comments received on whether listing the tricolored blackbird (*Agelaius tricolor*) as a threatened or endangered species may be warranted (Pursuant to Fish and Game Code Section 2074.2).

Dear Commissioners,

Thank you for your continuing attention to the Petition to list the tricolored blackbird filed by the Center for Biological Diversity and the ongoing protections provided by the Commission to the tricolored blackbird on an emergency basis.

As you know, the California Department of Fish and Wildlife determined in their petition evaluation report that "there is sufficient scientific information to indicate that the petitioned action may be warranted." In light of that determination and the detailed information provided in the Petition, the Center urges the Commission to determine that listing may be warranted, initiate a one-year status review, and provide protections to the tricolored blackbird as a candidate species for listing.

Sincerely,

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VIA EMAIL to fgc@fgc.ca.gov

Jack Baylis, President
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

Re: Petition to List Tricolored Blackbird

Dear President Baylis:

This letter is prepared and submitted by Dairy Cares, a coalition of California's dairy producer and processor organizations, including the state's largest producer trade associations (*Western United Dairymen, California Dairy Campaign, Milk Producers Council,* and *California Farm Bureau Federation*) and the largest milk processing companies and cooperatives (including *California Dairies, Inc., Dairy Farmers of America-Western Area Council, Hilmar Cheese Company,* and *Land O'Lakes, Inc.)* and other affiliates, such as California Cattlemen's Association. Formed in 2001, Dairy Cares is dedicated to promoting the long-term sustainability of California dairies. The coalition represents California's more than 1,500 dairy farms.

Joining us in support of this letter are the California Chamber of Commerce and the California Waterfowl Association. Our purpose in submitting this letter to the Commission is to provide a written response to the Department of Fish and Wildlife's evaluation of the petition submitted by the Center for Biological Diversity to list the tricolored blackbird as an endangered species under the California Endangered Species Act (Fish & G. Code, § 2050 et seq.). Previously, we provided the Commission with letters submitted to the Department that explain the scientific basis for our opposition to the petition itself. We incorporate those letters by reference and materials submitted in support of them.

Discussion

As we explain below, the Department's evaluation is flawed, reflecting uncritical acceptance of assertions in the petition regarding the quality and rigor of tricolored blackbird data collection efforts and conclusions that can be drawn from the data presented in both the petition and in recent summary reports of tricolored blackbird data, including the *Results of the 2014 Tricolored*

Blackbird Statewide Survey. We can surmise that the information left out of the evaluation was only due to time constraints placed on Department staff and offer this additional analysis to expand upon what was included in the Department's evaluation.

The petition and summary data presented therein collectively constitute a concerted effort by a small number of advocates of listing to shape available data and inadequate analyses into a narrative describing a species in crisis. We explained in our prior letters that this effort is belied by nearly 50 years of survey data that indicates that the tricolored blackbird is a predictable resident of more than 40 California counties. The tricolored blackbird's overall numbers appear to be relatively stable, and while declines in numbers have been recorded in some areas of the state, increases have been recorded in other areas, and new records of blackbird colonies accompany the expanded survey efforts in recent years. Both the petitioner and the Department in its written evaluation reject the data-driven conclusion that the size of the population of tricolored blackbirds in California has in fact been relatively stable over the past half-century. They dismiss pre-2008 abundance data and focus on a purported decline in census numbers from 2008 to 2011 and 2011 to 2014. But the petitioner and the Department failed to report that throughout the survey area the number of sites occupied by the tricolored blackbird in 2008, 2011, and 2014 was very similar, ranging from 155 sites in 2008 down to 138 in 2011 and up to 143 in 2014. (*See* Meese, R.J. 2015. Efforts to assess the status of the tricolored blackbird from 1931 to 2014. *Central Valley Bird Club Bulletin* 17:37-50.) The salient observation that a persisting constellation of occupied colony sites support the blackbird across the state – the most important measure of the status of the species – is inappropriately ignored in the petition and inexplicably unnoted in the Department's evaluation.

Furthermore, the Department's evaluation of the petition misses a fundamental ecological observation that must inform the conservation of tricolored blackbirds in California: the blackbird has adapted rapidly over past decades to dramatic ecological changes associated with the state's expanded urban and agricultural land uses and concomitant invasion by non-native plant species. The tricolored blackbird is unquestionably one of the state's most ecologically adaptable species. Over time, it has assumed life-history responses and patterns of resource use, including smaller colony (breeding group) sizes, use of upland ecosystems, nesting in non-native vegetation, and foraging on agricultural lands. These adaptations have conferred to the species success in a California landscape that no longer offers vast wetlands, using a new resource template allowing the tricolored blackbird to exist in substantial numbers across most of its historical distribution.

The petition's selective presentation and misrepresentation of data, analyses, and findings in the perhaps are to be expected, as the petitioner plainly is advocating for a particular outcome. But the Department has an obligation to undertake an independent evaluation of the petition in order to assess the veracity of statements in the petition. As explained by federal wildlife agencies in a recent rulemaking notice, even at the petition evaluation stage "evaluating the information presented in the petition in a vacuum can lead to inaccurately supported decisions and misdirection of resources away from higher priorities." (*See* https://www.federalregister.gov/articles/2015/05/21/2015-12316/endangered-and-threatened-wildlife-and-plants-revisions-to-the-regulations-for-petitions.) Below we describe four specific

instances where the Department's evaluation fell short of its charge, leading it to conclude that the petition has merit. The petition does not.

(1) *The Department fails to explain its prior determination regarding the species' status.*

In the evaluation (at page 7), the Department references its prior determination, on the basis of a review of the tricolored blackbird data from 1994 to 2000, that the extent of the decline of the species during that period was unclear. At the same time, the Department notes that Hamilton (2000) estimated the abundance of tricolored blackbirds to be 162,000 in 2000. As we describe in our prior submissions to the Department, the 2000 abundance estimate is within the range of prior and subsequent abundance estimates, including the effort of DeHaven and his colleagues to survey the entire range of the tricolored blackbird in 1971, which yielded an estimate of 107,540, and Beedy and Hamilton's intensive 1997 survey effort, which yielded an estimate of 232,960. (*See* DeHaven, R.W., F.T. Crase, and P.P. Woronecki. 1975. Breeding status of the tricolored blackbird, 1962-1972. *California Fish and Game* 61:166-180; Beedy, E.C. and W.J. Hamilton. 1997. Tricolored blackbird status update and management guidelines. Report to the U.S. Fish and Wildlife Service and California Department of Fish and Game.) The 2014 survey results of in excess of 145,000 tricolored blackbirds also are within the range of these historical abundances, particularly when one takes into account the large margins of error associated with those estimates. Nonetheless, the Department apparently discounts both its prior determination and the available data on the species' abundance when it concludes in the evaluation (at page 9) that the petitioner has submitted sufficient information to create a reasonable inference that the tricolored blackbird has experienced historic declines over recent decades.

(2) *The Department claims a rigorous and consistent methodology has been used since 2008.*

The Department states (at page 8) that a "rigorous and consistent methodology" has been used since 2008. But this statement is false. To begin with, the survey protocol – or the set of rules that surveyors are instructed to follow – was altered between 2011 and 2014. The survey protocol is particularly important to the recent survey efforts, because those efforts rely on a substantial number of volunteers with disparate levels of education, training, and experience. The fact that the protocol was altered undermines the Department's claim that the three most recent surveys used a "consistent methodology," which is the basis for its claim that these surveys are materially more reliable than earlier survey efforts.

Furthermore, rather than serve their intended quality-control functions, the protocols were honored in the breach. For example, whereas the protocol in place for 2014 explicitly required participants to record the precise location that was surveyed, a review of a subset of the data entered into the tricolored blackbird portal indicate that *more than 25 percent of the sites* (or 87 of 320 sites reviewed) *did not include information on the location of the survey*. In addition, whereas the protocol for 2014 recommends participants spend a minimum of 15 minutes at each site, a review of a subset of the data entered into the tricolored blackbird portal indicate that *more than 40 percent of the sites* (or 139 of the 320 sites reviewed) *were surveyed for less than 15 minutes*. In fact, 83 of the 320 sites reviewed were only surveyed for five or fewer minutes. Not only has the survey methodology changed since 2008, survey participants frequently failed to make observations and collect data consistent with prescribed methods.

As for the rigor of the surveys, the petition and the evaluation default to faint praise – the surveys over the past decade are better than they were in decades past. But the surveys are not sufficiently accurate to inform either an assessment of the status of the tricolored blackbird or establish the trend in its population. The surveyors themselves are seeking an acceptable protocol that can produce reliably accurate census of the species. Meese et al. note that it "is inherently difficult to assemble enough information on rare species to enable robust evidence-based recovery efforts" and tricolored blackbirds "pose particular problems in that they breed in rather small numbers of large, somewhat ephemeral colonies that, over time, come and go across that landscape." (Meese, R.J., J.L. Yee and M. Holyoak. 2015. Sampling to estimate population size and detect trends in tricolored blackbirds. *Central Valley Bird Club Bulletin* 17:51-56.) They go on to state "[a]n increase in the frequency and statistical rigor of the population estimate will help agencies to monitor the status of the population and its responses to conservation actions" and list "desirable attributes of a new sample-based scheme for estimating populations." (*Ibid*. at page 54.) What the petitioners do not acknowledge and the evaluation does not recognize is that the absence of those desirable survey attributes (such as estimates of the probability of colony detection and confidence limits for the population estimates) render the efforts unable to generate estimates of population size and inter-annual change. The three recent population estimates are completely unreliable as census numbers. The population size estimates for tricolored blackbirds from 2008, 2011, and 2014 cannot serve as the basis for a candidacy decision by the Commission for the very reasons documented by Meese and his colleagues.

Despite the facts that the survey effort has been funded by the Department and the survey results are publicly available, the Department does not appear to have conducted a meaningful scientific review of the information. Instead, it appears the Department relied on the summary of data in the petition and the *Results of the 2014 Tricolored Blackbird Statewide Survey*. Those sources do not offer a scientifically defensible consideration of available information pertinent to conservation planning for the blackbird.

(3) *The Department states that, perhaps most importantly, the number of colony sites visited in 2014 far exceeds any other survey.*

In recommending that the petition should be accepted by the Commission, the Department contends (at page 8) that an increase in the number of colony sites surveyed from 2008 to 2011, and again from 2011 to 2014, is critical new data that allows for accurate assessment of the status of the California population. This is reinforced by the fact that the Department includes just one figure in its written evaluation (at page 26), and that figure overlays the number of sites surveyed on the estimated number of birds for the three surveys conducted in 2008, 2011, and 2014. Meese (2015, page 43) reports that the triennial surveys added "249 new colony location records since 2008," and asserts on that basis "the recorded decline cannot be attributed to a decline in the thoroughness of the surveys." Those new colony locations are also described as "previously unreported Tricolored Blackbird locations." (Meese, R.J. 2015. Efforts to assess the status of the tricolored blackbird from 1931 to 2014. *Central Valley Bird Club Bulletin* 17:37-50.) But no evidence exists to support the contention that even a fraction of the sites surveyed for the first time since 2008 provide habitat for the tricolored blackbird or have ever been occupied by the species. More than doubling the number of survey sites from 2008 to 2014 (from 361 to 802

according to the Department) is only meaningful if the sites added constitute occupied tricolored blackbird habitat or the sites offer the full array of resources and resource conditions that might allow them to be occupied.

While neither the petitioner nor the Department report the number of new sites that constitute viable nesting habitat that has at some point been occupied by the species (and that, therefore, are properly included in the sites reported), Meese does so in a recent article on the species. Meese reports that 75 new sites were added in 2011 that were occupied and 75 new sites were also added in 2014 that were occupied. (*Ibid*. at page 44.) Meese reports in the same article that the total occupied sites was near stable between 2008 (155 sites), 2011 (138 sites), and 2014 (143 sites). The implications of this information are notable: 441 sites were added from 2008 to 2014, but the majority of these sites were not occupied, so it is not at all clear they should have been included.

A review of the actual data available on the tricolored blackbird portal confirms that many dozens of sites were included that certainly do not constitute habitat. Notes associated with many of the sites include statements, such as:

- Fully developed with houses, should be removed from survey routes.
- Nesting site here has been fully excavated by Quarry activity, no longer present.
- No longer has nesting habitat, converted to vineyards.
- Not suitable habitat. This site is riparian habitat adjacent to Feather River. Recommend site be removed.
- Not suitable habitat. This site is in a riparian forest.
- Planted in rice; no breeding possible.
- No nesting substrate. Pasture of mostly non-native grasses.
- This is a residential neighborhood in Manteca. There is no appropriate habitat around.
- This is a residential area in Tracy, no appropriate habitat.
- No suitable habitat for a long time.

Based on a review of 320 of the site records for 2014, at least 57 instances can be found for which the surveyors noted the absence of habitat. There is no evidence that the Department conducted a review that was sufficiently thorough that it could identify misrepresentations in the petition (and the *Results of the 2014 Tricolored Blackbird Statewide Survey*) of either reported survey data or the status of habitat on the sites surveyed. The uncritical acceptance of the assertions regarding "new colony sites" in the petition and survey reports manifests as a quantitatively inaccurate figure in the evaluation that incorrectly characterizes areas as habitat for tricolored blackbird, when they are not. We are troubled that the Department did not bring this important information to light for the Commission in its written evaluation.

(4) *The Department's evaluation states that the petition presents evidence that tricolored blackbirds have declined or disappeared from portions of their range.*

The above inference (at page 10) is based on infrequent tricolored blackbird surveys (once every three years). It also appears to stem from the false premise that, when a species is absent from a location during such a temporally constrained survey period, such fact provides a basis for the

conclusion that the sampled habitat area is unoccupied and that the range of the species has declined. Ample evidence indicates that the peripatetic colonies move freely among surveyed and unsurveyed areas, and habitat occupancy can be temporary and not recorded.

That said, it is strictly true that the tricolored blackbird has disappeared from locations within the bounds of its range; however, a very substantial proportion of animal species have declined or disappeared from portions of their ranges in California as the state was settled, and its valleys and coastline were developed. The Department's evaluation notes correctly that "[o]verall, the range of the tricolored blackbird has not appreciably changed since the mid-1930s." It then describes inter-seasonal movement patterns across and between regions of the state, supporting the observation that while habitat loss has occurred within the range of the blackbird, and new habitats have emerged and are now occupied by it, the range of the tricolored blackbird is intact. Indeed the range is now understood to be broader than appreciated before surveys were undertaken in past decades. The Department's evaluation ignores the essential observation that no previous candidate for protection under the state's Endangered Species Act has enjoyed such a wide distribution across the state. The bird inhabits historical sites where the federal refuge system protects remnants of California's valley wetlands, upland circumstances where invasive blackberry provides nesting substrates in previously unavailable grasslands in coastal and Sierra foothill situations, and dynamic situations in cropland, especially those associated with dairy operations. The tricolored blackbird moves readily within and among those ecological associations across much of the state; it has not "declined or disappeared" within its range, rather it adjusted its habitat use and patterns of landscape occupancy in response to environmental changes, allowing it to exploit new resources as they have become available over its historical range.

Conclusion

The Department of Fish and Wildlife's evaluation of the petition to list the tricolored blackbird missed a ready opportunity to interpret the conservation needs of the species through the lens of best available science. A growing body of information is available to guide the Commission to a defensible listing decision. Predictably, the petition presented a biased and incorrect interpretation of available survey results selected to encourage a listing action. The Department's evaluation does not provide as in-depth an analysis of the survey data as was possible. We provide additional analysis to ensure a robust understanding of the knowledge regarding the tricolored blackbird to better inform the Commission's decision making. Although declines in the number of tricolored blackbirds from their pre-settlement numbers are clear and certain, losses over the past several decades are not substantiated, as large colonies associated with expansive Central Valley wetlands have been replaced with smaller colonies dispersed across upland and agricultural settings. It is important to acknowledge that the contemporary tricolored blackbird census efforts, touted in the petition as documenting a precipitous decline in blackbird numbers from 2008 to 2014, do not do so. Instead recent surveys, despite high observer error, estimation variation, and geographic incompleteness, indicate relative demographic stability across the state. With widely acknowledged presence in 46 California counties, with numbers in the range of 150,000 to perhaps more than 300,000 individuals statewide, and as the subject of a precedent-setting agency and stakeholder conservation planning effort, the tricolored blackbird defies the assertions in the petition that was submitted to the Commission.

Sincerely, Sincerely,

J.P. Cativiela
Program Coordinator, Dairy Cares

Cc: Sonke Mastrup, Executive Director, Fish and Game Commission
Charlton Bonham, Director, Department of Fish and Wildlife
Charles "Chuck" Ahlem, Chairman, Dairy Cares
Paul Sousa, Environmental Services Director, Western United Dairymen
Noelle Cremers, California Farm Bureau Federation

State of California
Department of Fish and Wildlife

Memorandum

Date: May 14, 2015

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: **Agenda Item for the June 11 Fish and Game Commission Meeting Regarding Amendments to Sections 478, 479, and 702, Title 14, California Code of Regulations (CCR) Re: Bobcat Protection Act**

The Department of Fish and Wildlife (Department) requests that the Fish and Game Commission (Commission) publish notice of its intent to amend the bobcat trapping regulations and fees in sections 478, 479, 702, Title 14, CCR. The Commission authorized the notice of the intended amendments on December 3, 2014. The Department is proposing significant changes to the existing regulations in order to conform to the statutory requirements set forth in Section 4155, Fish and Game Code.

Two Options are proposed for consideration:

Option 1. Creation of an extensive Bobcat Trapping Closure Area within which trapping of bobcats is not permitted, as well as delineating Property Specific Closure Areas around national and state parks and national monuments and wildlife refuges in which bobcat trapping is prohibited. Fees to recover the costs of the Department's administration and enforcement of the regulations are also proposed to be established in Section 702.

Option 2. A complete prohibition on bobcat trapping in California. With the exception of depredation trapping, this option would ban all trapping of bobcats statewide.

The Department recommends implementing the designated bobcat trapping closures under Option 1 and monitoring the participation of trappers, enforcement effort and administration of the new regulation for a period of at least two years.

In order to recover the costs of the new regulations in Option 1, the Department recommends the following fees:

Bobcat Trapping Validations	$1,137.00 per validation
Bobcat Shipping Tags	$ 35.00 per pelt

If you have any questions regarding this item, please contact Dr. Eric Loft, Chief, Wildlife Branch at (916) 445-3555 or Eric.Loft@wildlife.ca.gov.

Attachments

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STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend Sections 478, 479 and 702
Title 14, California Code of Regulations
Re: Implementation of the Bobcat Protection Act of 2013

I. Date of Initial Statement of Reasons: April 14, 2015

II. Dates and Locations of Scheduled Hearings:

(a) Notice Hearing: Date: December 3, 2014
Location: Van Nuys

(b) Discussion Hearing: Date: June 11, 2015
Location: Mammoth Lakes

(c) Adoption Hearing: Date: August 5, 2015
Location: Fortuna

III. Description of Regulatory Action:

(a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The Fish and Game Commission (Commission) proposes to implement the provisions of Fish and Game Code (FGC) Section 4155, the Bobcat Protection Act of 2013. Specifically, with this rulemaking the Commission will address the following requirements of Section 4155:

"(b)(1) Through the commission's next regularly scheduled mammal hunting and trapping rulemaking process occurring after January 1, 2014, the commission shall amend its regulations to prohibit the trapping of bobcats adjacent to the boundaries of each national or state park and national monument or wildlife refuge in which bobcat trapping is prohibited.

(b)(3) The commission shall delineate the boundaries of an area in which bobcat trapping is prohibited pursuant to paragraph (1) or (2) using readily identifiable features, such as highways or other major roads, such as those delineated for Joshua Tree National Park in subdivision (a).

(e) Consistent with the requirements of subdivision (c) of Section 4006, the commission shall set trapping license fees and associated fees, including, but not

limited to, shipping tags required pursuant to Section 479 of Chapter 6 of Subdivision 2 of Division 1 of Title 14 of the California Code of Regulations, for the 2014–15 season, and any subsequent seasons in which bobcat trapping is allowed, at the levels necessary to fully recover all reasonable administrative and implementation costs of the department and the commission associated with the trapping of bobcats in the state, including, but not limited to, enforcement costs.

(f) This section does not limit the ability of the department or the commission to impose additional requirements, restrictions, or prohibitions related to the taking of bobcats, including a complete prohibition on the trapping of bobcats pursuant to this code."

This rulemaking proposes to amend sections 478, 479 and 702, Title 14, CCR to restrict the take of bobcats by trapping in all or portions of the state. The proposed regulatory changes will not affect the take of bobcats with a hunting license and bobcat hunting tags under subsection 478.1, or under a depredation permit issued pursuant to Section 401.

BOBCAT TRAPPING IN CALIFORNIA

Trapping Regulations Generally

In California, bobcats are classified as a nongame mammal (FGC § 4150). Under current regulations, bobcats may be trapped under the authority of a general trapping license (Title 14 § 478). The Department of Fish and Wildlife (Department) requires that individuals successfully pass a written test of competence and proficiency in trapping before applicants can be issued a trapping license (FGC § 4005). A trapping license fee of $115 is required for residents over 16 years of age; non-resident trapping license fees are set at $570 (FGC §4006). Licensed trappers may take bobcats during the open season for trapping (Nov. 24 through Jan. 31; Title 14 § 478) and no additional trapping license validation is currently required. It is unlawful for any person to trap for the purposes of recreation or commerce in fur any furbearing or nongame mammal with any body-gripping trap (Title14 § 465.5). The only legal trap for bobcat is a live box trap and all traps must be visited daily. Each trap is uniquely identified with the Trapper's ID number (Title14 § 465.5). Trappers are required to report all of their harvest annually to the Department (Title 14 § 467).

Shipping Tags

A shipping tag is required to be affixed to bobcat furs (pelts) or products that are sold or traded interstate or out of the country in accordance with the *Convention on International Trade in Endangered Species of Wild Flora and Fauna* (CITES) and Title 14 Section 479. In California, only licensed trappers (or licensed fur dealers) may purchase shipping tags and engage in commerce in bobcat furs or products. The Department makes these shipping tags available to licensed trappers during, and for

two weeks following, the open season for bobcats. Trappers must supply information on the place, time, date and method of take as part of the tagging process. The Department currently charges an administrative fee of $3 per pelt for the issuance of shipping tags.

Bobcat Trapping Data

The Department monitors the number of trappers and requires all trappers to report their harvest at the end of each license year (fiscal year) in order to maintain a valid trapping license. Together, these data are used to compile the Licensed Fur Trapper and Dealer's Report and the Bobcat Harvest Assessment each year. These reports monitor annual bobcat harvest relative to the quotas established in accordance with the requirements of CITES and allow the Department to understand trends in the amount and distribution of bobcat harvest. These reports are available to the public on the Department's
website: https://www.dfg.ca.gov/wildlife/hunting/uplandgame/reports/bobcat.html

In 1981, the Department developed sustainable harvest quotas for bobcats in response to bobcat trapping levels that exceeded 20,000 animals per year in the late 1970's. Estimates of bobcat density were based on data obtained through targeted scientific studies of bobcat populations in San Diego County, Eastern Siskiyou County, and the Mojave Desert region. In accordance with CITES, the Department developed a maximum harvest quota of 14,400 bobcats per year which was submitted to and approved by the U.S. Fish and Wildlife Service Office of Scientific Authority. The quota was established to ensure that trade in bobcat furs was not a potential detriment to the health of the state's bobcat population.

The level of bobcat trappers has declined over for the past two decades (2013-14 Bobcat Harvest Assessment) and the number of all trappers has declined dramatically from an average of over 2,500 trapping licenses sold annually during the 1980's to an average of less than 800. Of these, about 200 trap bobcats, over the past 20 years (refer to Exhibit A). Bobcat trappers have comprised an average of 25 percent of all trappers over this period and harvest by trappers in California has been less than 20% of the annual quota since 1989.

PROPOSED REGULATIONS

The Department is providing two options for the Commission to consider in implementing the Bobcat Protection Act:

OPTION 1 (RECOMMENDED):

PARTIAL CLOSURE OF THE STATE TO BOBCAT TRAPPING AND ESTABLISHING CLOSURE BOUNDARIES AROUND PROTECTED AREAS.

As required in subsection 4155(b)(1) of the FGC, the Department identified each national or state park and national monument or wildlife refuge that would require closure areas in accordance with the statute. The Department's initial assessment based on the Lands Coverage in the Department's Geographic Information System identified 283 individual management units for wildlife refuges and parks. These represent a total of 186 designated national and state parks, national monuments and wildlife refuges (refer to Exhibits B and C). Pursuant to FGC section 4155(b)(2), the Commission may consider whether to prohibit bobcat trapping adjacent to additional conservation areas in 2016.

For clarity, this ISOR will refer to "national or state park and national monument or wildlife refuge" inclusively as "protected area(s)."

Option 1 prohibits trapping of bobcats surrounding all protected areas identified above by: 1) closing certain large areas of the state where harvest of bobcats by trapping has historically been low; and 2) delineating closure boundaries adjacent to 23 specific protected areas in remaining portions of the state.

Delineation of specific highway and road boundaries surrounding each of the 186 protected areas in the state would require dozens of additional pages of regulation resulting in a very complex and difficult to understand mosaic of areas where trapping would be prohibited. By proposing a larger, contiguous closure encompassing most of the 186 protected areas, this proposal fully implements the statute while resulting in a less complicated system of closures that should be clearer to the public, the trapping community, and the Department's enforcement staff.

The map depicted in Exhibit C represents the cumulative distribution of bobcat trapping harvest by county between November 2003 and January 2013. These data indicate that relatively low numbers of bobcats have been harvested over a large part of the central and southwestern portion of the state over the past decade. Trapping harvest is concentrated in two areas in the northeastern and southeastern portions of the state. Therefore, the Department is recommending that a large area of the central and southwestern portion of the state be closed to bobcat trapping. As mentioned above, development of individual closure regulations surrounding all 186 properties in areas with low levels of trapping creates an unnecessarily complicated regulatory scheme that would be both difficult to understand and to enforce. Under the proposed approach, approximately 60% of the state would be closed to bobcat trapping, and the number of protected areas requiring property-specific closure boundaries is reduced from 186 to 23 properties. Exhibit B specifies which protected areas (indicated by reference to the new subsection number) will have delineated closures. Exhibit D shows the location of the "Bobcat Trapping Closure Area" and the 18 "Property-Specific Closure Areas" surrounding the remaining 23 protected areas (note that some protected areas have been grouped within a single property-specific closure).

Effect of a Partial Closure on the Department's Bobcat Program

The Department will incur costs associated with managing bobcat harvest under both options. However, if Option 1 is adopted, the Department anticipates greater costs associated with the development of a bobcat management plan compared to current efforts. Management plan costs under Option 1 are anticipated to be about twice those under Option 2 because of the higher levels of take associated with an ongoing trapping program. Under the recommended option, the Department would:

1) Report annual harvest from trapping, hunting, and depredation including compliance with CITES.
2) Develop a new management plan for bobcat trapping and hunting.
3) Collect biological information from harvested bobcats as identified through the development of the management plan.

Because trapping accounts for the majority of bobcat harvest statewide, costs associated with each of these categories would be higher than those under Option 2 (below). The management plan and harvest reporting would be of greater breadth and more expensive under Option 1.

The implementation costs presented in detail in Table 1 of the Economic Impact Assessment (refer to Section VII) do not include the costs that the Department would incur in developing and implementing a bobcat population survey as proposed in the Governor's signing message. Necessary surveys and monitoring of bobcat populations would likely only be possible with additional funding from the legislature or other sources.

Effect of a Partial Closure on the Department's Law Enforcement Program

Imposing new trapping closures will require learning where bobcat trapping is legal versus prohibited in California by all who are affected. There may be initial uncertainty in distinguishing between areas legal to trap and those that are closed. Enforcement staff anticipates an increase in false reports of illegal trapping activity, and therefore the Department anticipates an increase of approximately ten percent in enforcement costs for at least the first few years.

Proposed Amendments to Existing Regulations (Option 1):

- Amend Section 478, Bobcat, by adding descriptions of a "Bobcat Trapping Closure Area" and 18 "Property-Specific Closure Areas" surrounding 23 protected areas and incorporate editorial changes and re-numbering of the text for clarity.

  Necessity: Adding boundary descriptions to the regulations implements the statutory requirement that the protected area around each national or state

park and national monument or wildlife refuge be identified using readily identifiable features, such as highways or other major roads, §4155(b)(1) and (b)(3), FGC.

OPTION 2:

PROHIBIT BOBCAT TRAPPING THROUGHOUT CALIFORNIA.
(Requested for consideration by the Commission on December 3, 2014)

Fish and Game Code subsection 4155(f) affirms the Commission's authority to impose greater restrictions including a complete prohibition on bobcat trapping. The Commission, at its December 2014 meeting, directed the Department to include in this proposal an option to prohibit bobcat trapping in California. The regulatory change proposed in Option 2 implements this directive by prohibiting bobcat trapping in California.

Effect of a Prohibition on Bobcat Trapping in California

The Department will incur costs associated with managing bobcat harvest under both options. Option 2 proposes a complete ban on bobcat trapping in California. The take of bobcats with a hunting license and take of bobcats under a depredation permit would continue to be allowed. Under Option 2, the Department would:

1) Report annual harvest from hunting and depredation.
2) Develop a new management plan focused primarily on bobcat hunting.
3) Collect biological information from harvested bobcats as identified in the management plan.

Hunting of bobcats is less likely to result in impacts to the population because the total take is considerably lower than trapping and there are limits on the number of animals each hunter can take. Effort related to harvest reporting costs is projected at approximately 50 percent of existing baseline costs. Similarly, the preparation of a bobcat management plan under Option 2 is projected to be approximately half the cost of a management plan under Option 1. Without trapping, the lower level of bobcats taken under Option 2 will result in a less complicated management plan.

The implementation costs presented in detail in Table 1 of the Economic Impact Assessment (refer to Section VII) do not include the costs that the Department would incur in developing and implementing a bobcat population survey as proposed in the Governor's signing message. Necessary surveys and monitoring of bobcat populations would likely only be possible with additional funding from the legislature or other sources.

The Effect of a Complete Prohibition on the Department's Law Enforcement Program

Under a complete prohibition on bobcat trapping, the nature of the Department's enforcement activities is projected to shift from routine patrol and enforcement of existing trapping regulations to focus on investigative efforts aimed at detecting and preventing unlawful bobcat trapping. Intelligence gathered indicates some in-state and some out-of-state unlawful trappers may move into California in areas wherever bobcat trapping is banned, especially those with historically high bobcat trapping success. Reasons include reduced or no competition, no daily trap check requirement, use of illegal leg-hold traps which are deployed in much greater numbers and are much more difficult to find, and no seasonal restrictions

Unlawful trappers using illicit techniques may trap earlier in the season and well past the normal end of the trapping season resulting in increased law enforcement effort. Banning bobcat trapping will not eliminate the cost of bobcat trapping enforcement. The Law Enforcement Division anticipates that the enforcement effort will increase for at least the first few years after a ban is implemented.

Additionally, there would be no other trappers in the field to provide the tips wildlife officers rely upon to make many good cases. Lawful trappers are keenly aware of other trappers who work in their areas and provide many tips of unlawful activities that wildlife officers would not always discover on their own. Under Option 2, the Department expects some level of illegal take to continue due to the demand for pelts and the potential profits from their sale.

Conclusion: Wherever bobcat trapping is banned (whether a partial or full ban), the Department anticipates illegal trapping will continue based largely upon the high prices derived from bobcat pelts over the last few years. Because California's Sierra Nevada mountains, particularly the southern and east side, have a healthy bobcat population with high-value pelts, this region may continue to attract commercial bobcat trappers. Though unlawfully taken in California, these pelts could be easily transported across state lines and sold in another state where trapping is lawful. This action would violate state and federal laws but would require significant increases in investigative work to detect and prove.

Proposed Amendments to Existing Regulations (Option 2):

- Amend Section 478 by prohibiting bobcat trapping throughout California.

  Necessity: Prohibiting bobcat trapping would implement the Commission's authority to regulate take of bobcats pursuant to FGC sections 200, 202, and 4150, and affirmed in subdivision (f) of FGC section 4155.

- Amend Section 479 eliminating pelt tags, fees and department marks for bobcats

taken by trapping.

Necessity: If prohibited, there is no reason for the Department to continue to offer tags or marks, or to collect fees for pelt shipping tags.

Department Recommendation

The Department recommends Option 1. This would include establishment of designated bobcat trapping closures, monitoring bobcat take levels, participation of trappers, enforcement effort and costs, and administration of the new regulation for a period of at least two years. The Department last reviewed its bobcat harvest strategy in its 2004 Environmental Document assessing Furbearing and Nongame Mammal Hunting and Trapping, which concluded that the level of take associated with bobcat trapping in California is insignificant relative to natural production and mortality in the species. Bobcats are a renewable resource, provide opportunity for the public to use and enjoy wildlife, and the Department considers the current levels of take to continue to be sustainable. The history of trapping in California illustrates that the population has sustained significantly higher levels of annual harvest in the past with no lasting consequence.

COST RECOVERY

Fish and Game Code section 4155(e) requires the Commission to set trapping license fees and associated fees at the levels necessary to fully recover all reasonable administrative and implementation costs associated with the trapping of bobcats in the state. Based on factors such as past effort by bobcat trappers, law enforcement effort, and ongoing administrative costs, the Department recommends that new fees be applied to the Trapping License for those intending to take of bobcats and also to the shipping tags for bobcat pelts. Since many licensed trappers do not pursue bobcats, the Department proposes to establish a new “Bobcat Trapping Validation.” The range of fees proposed to recover the costs of the Department and the Commission associated with the bobcat trapping program is presented in Section VII of this ISOR.

In evaluating the proposed fees the Department considered the following:

1. The Department will incur ongoing costs even under a full prohibition on bobcat trapping (Option 2). Enforcement costs are projected to increase due to the increased investigation time required to deter unlawful bobcat trapping. Because legal trapping will no longer occur, there would be no mechanism to recover these ongoing costs.
2. Under a partial closure (Option 1), the complex boundary descriptions and unfamiliarity with the regulation could lead to initial difficulty in enforcement, including some unintended illegal take of bobcat, and mistaken reports of illegal activity. These will result in some added cost to current operations which may subside over time.

3. Whether a partial or full ban of trapping is adopted, the Department would pursue development of a management plan for bobcats in California.
4. To fully recover costs of the trapping program under Option 1, the Department proposes that trappers pursuing bobcats be required to purchase an annual trapping license, an annual Bobcat Trapping Validation, and pay a higher per pelt shipping tag charge.
5. It is not possible to accurately predict the outcome of higher fees and reduced trapping opportunity on the viability of bobcat trapping as a business enterprise. A new assessment should be made following at least two seasons with the partial ban and fees in place to determine if the Bobcat Trapping Validation Fee and shipping tag fees require adjustment in order to fully recover costs associated with the trapping of bobcats.
6. The 'no cost' for personal use and "department mark" provisions in Section 479 are proposed to be removed in accordance with the statutory requirement that the Commission "set trapping license fee and associated fees" to fully recover all reasonable costs associated with trapping bobcats. (FGC § 4155(e)). The Department mark is no longer necessary since shipping tags will be attached to every pelt as proposed in amended subsection 479(a)(2). (Note: Up to five bobcat pelts may be taken for personal use (not for sale) each year under a hunting license and bobcat hunting tags).

New Bobcat Trapping Validation and Fee

The Department proposes to establish a new "Bobcat Trapping Validation." At this point the Department is not proposing an increase in the general trapping license fee, but the validation will be required if the licensed trapper intends to take bobcats. A separate fee is proposed to be paid annually for the validation and issued through the Automated License Data System (ALDS) in the same manner as the license.

Increased Fee for Shipping Tags

Bobcat pelt shipping tags (refer to Exhibit E) are required to be placed by the Department on each pelt in order to transport or ship pelts out of state or country. The Department issues the tag in accordance with CITES. (Note: While the bobcat is not listed as a threatened or endangered species, it is included in Appendix II of CITES to control trade and limit opportunity for illegal take). The present fee is $3.00 per pelt. The Department proposes to increase the fee and require that all bobcat pelts taken under a trapping license shall be tagged.

Fee Determination

In determining the proposed fee schedule to recover its costs, the Department considered how different price points on either item may influence trapper response. Any change in fees designed to recover Department costs must consider that price increases may induce substantial drops in participation such that cost recovery

objectives are defeated. Additionally, in general, fee increases for commercial licenses have been shown to induce an increase in effort that may result in an increase in tagged pelts. Those with lower levels of commitment to trapping may drop out; the moderately committed, may also reduce effort; but the most enterprising may continue to trap but with an increase in trapping effort by placing more traps in more areas over more days during the season.

The cost of a trapping license and the proposed bobcat validation may be perceived as an initial entry cost. The validation is in that way, a "sunk cost" that will effectively diminish as a per unit operating cost with each additional pelt taken. In contrast, shipping tags are a variable cost depending on the number of pelts taken by each trapper. As such, each shipping tag is a recurring cost that may be perceived as more directly cutting into an individual trapper's profit per pelt.

If the tag price is too high, some may seek to evade that final cost by illegally transferring pelts to other states for shipping. On the other hand, if the combined bobcat validation and license fee exceeds neighboring states' non-resident trapping fees, California trappers may choose to go out-of-state. At some level, higher license fees may encourage unlawful behavior. While most people are law-abiding, fee setting should be mindful of any possible unintended consequences.

The Department will incur a certain level of bobcat-related enforcement, management and administrative costs whether or not bobcat trapping continues in California. The Department will logically incur incremental increases in enforcement, management, and administrative costs under the partial bobcat trapping closure proposed under Option 1. Total program costs under Option 1 are estimated at approximately $212,000 per year (refer to Table 1 on page 19).

As described in the Economic Impact Assessment (refer to Section VII), the Department assumed an annual sale of 160 bobcat validations and 860 shipping tags for purposes of calculating cost recovery. At these volumes, the proposed fee for the bobcat trapping validation would range from $0 to $1,325 and the proposed fee for each shipping tag would range from $0 to $245 per pelt. A range of potential fees is presented with the recommended fee combination of $35 per shipping tag and $1,137 for the proposed Bobcat Trapping Validation.

Proposed amendments to fee regulations

- Amend Section 702, Fees, by adding a new subsection (d)(1) to require (in addition to the trapping license fee set forth in the Fish and Game Code) the payment of a Bobcat Trapping Validation Fee set at $[0 – 1,325] and subject to annual adjustment.

  Necessity: Adding the new Bobcat Trapping Validation fee implements the statutory requirement that the Commission set trapping license fees and

associated fees to fully recover all reasonable costs associated with trapping bobcats. (FGC § 4155(e)).

- Amend Section 479, Bobcat Pelts, by deleting the current bobcat pelt shipping tag fee from subsection (c)(5); and Amend Section 702, Fees, adding a new subsection (d)(2), Shipping Tags, and increasing the fee from $3 to $[0 - 245] and subject to annual adjustments. Additionally, there are editorial changes and re-numbering of the text for clarity.

  Necessity: Increasing the current fee for a bobcat shipping tag implements the statutory requirement that the Commission set trapping license fees and associated fees, including, but not limited to, shipping tags to fully recover all reasonable costs associated with trapping bobcats. (FGC, §4155(e)). The Commission established Section 702 as the location for tags and fees; this section is the logical place for new bobcat fees.

- Amend Section 479 by deleting the 'no cost' provision and 'department mark' on pelts not for sale in subsection (a)(1) and by eliminating the listed Method of Take in subsection (c)(4).

  Necessity: Removing the 'no cost' is in accordance with the statutory requirement that the Commission "set trapping license fee and associated fees" to fully recover all reasonable costs associated with trapping bobcats. (FGC § 4155(e)). The Department mark is no longer necessary since shipping tags will be attached to every pelt as amended in subsection 479(a)(2). The use of hounds is prohibited in FGC Section 3960(b), so specifying the method of take is no longer necessary.

Department Fee Recommendation

Price allocation between the two items supports shipping tag fees set at $35, and bobcat validation fee set at $1,137.

(b) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 202, 4150, and 4155, Fish and Game Code. Reference: Sections 3960, 4150, and 4155, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None

(d) Identification of Reports or Documents Supporting Regulation Change:

2004 Environmental Document

2013-14 Bobcat Harvest Assessment

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

The Commission and Department received comments from interested parties regarding bobcat trapping regulations at the Wildlife Resources Committee (WRC) meetings in Sacramento in July and September of 2014. The WRC recommended that the Commission authorize staff to work with the Department to prepare a rulemaking to implement the Bobcat Protection Act mandate. The recommendations of the WRC and CDFW staff were further discussed and accepted at the Commission meetings on October 8, 2014 in Mount Shasta; in Sacramento on December 3, 2014 and February 12, 2015; and in Santa Rosa on April 9, 2015.

Prior to publication of the Notice of Proposed Rulemaking, the Commission and Department received more than 49,000 emails and other correspondence from the public largely expressing their desire to have the Fish and Game Commission ban bobcat trapping throughout the entire state, consistent with FGC Section 4155(f). Some alternatives were proposed, such as the use of Global Positioning System (GPS) coordinates to delineate closure areas, but none were found to be consistent with the statutory requirements. Suggestions were made for additional protected areas that were beyond the scope of the current rulemaking. Other areas may be considered by the Commission in 2016 pursuant to FGC Section 4155(b)(2) if the Commission adopts Option 1.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

1. Prohibit trapping adjacent to protected areas by delineating closure boundaries using highways and roads surrounding all protected areas.

The Department has determined that there are 186 protected areas within the state where trapping must be further prohibited to implement the statute. While meeting the letter of the statute, delineation of specific highway and road boundaries surrounding each of the 186 protected areas would require dozens of additional pages of regulation and result in a very complex and difficult to understand mosaic of areas where trapping would be prohibited or authorized.

This alternative would create an unnecessarily complicated regulatory scheme that would be both difficult for the public to understand and for the Department to enforce. The Department does not recommend this as an alternative for further consideration.

2. Prohibit trapping within a predetermined distance adjacent to protected areas and requiring trappers to use GPS technology to determine the location of

traps.

GPS technology is highly effective and in wide use by the public in many applications. With proper equipment trappers may determine their location with adequate precision in a matter of seconds. Trappers have recommended this method as an effective alternative in establishing a closure boundary surrounding each protected area.

The Department has determined that using GPS technology to define closure boundaries is inconsistent with the requirement of the statute to use "readily identifiable features, such as highways or other major roads." Therefore, the Department does not recommend this as an alternative for further consideration.

(b) No Change Alternative:

The statutory mandate to promulgate regulations is set forth in Fish and Game Code Section 4155(b)(1):

"Through the commission's next regularly scheduled mammal hunting and trapping rulemaking process occurring after January 1, 2014, the commission shall amend its regulations to prohibit the trapping of bobcats adjacent to the boundaries of each national or state park and national monument or wildlife refuge in which bobcat trapping is prohibited."

Therefore the Commission has no discretion to consider the no change alternative.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment. Therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action have been assessed, and the following initial

determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The Commission does not anticipate significant statewide adverse economic impact directly affecting business, although the proposed fee increases may reduce the ability of California bobcat trapping businesses to compete with businesses in other states.

The principle businesses that are expected to be impacted by the proposed regulatory changes are approximately 200 licensed trappers which Department records indicate have historically taken bobcat and paid the current shipping tag fee. Their income is not derived solely from the take of bobcat pelts during the relatively short bobcat trapping season, but also from other animals lawfully taken for profit. Whether the increase in fees or the reduction in opportunity from limitations on trapping areas, as described in Option 1, or a complete ban as described in Option 2, the economic loss to the state as a whole is expected to be very small and would not significantly affect California businesses or their ability to compete with businesses in other states.

(b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any significant impacts on the creation or elimination of jobs within the State because a partial or full ban would affect only a small number of licensed commercial trappers whose income is not derived solely from bobcat pelts but also from other animals lawfully taken for profit.

The Commission anticipates potential benefits to the health and welfare of California residents through the enhancement of non-consumptive use benefits. Non-consumptive uses that could increase include: the observation of bobcats in the wild and the perceived value of the bobcat population's contribution to ecosystem functioning.

The Commission does not anticipate benefits to worker safety because this regulatory action will not impact health, welfare or worker safety.

The Commission anticipates possible benefits to bobcat populations because the regulations required by statute will place further limitations on the take of bobcats.

(c) Cost Impacts on a Representative Private Person or Business:

If Option 1 is adopted, the Commission anticipates increased costs to the business of commercial trappers because of the additional fees for the Bobcat Trapping Validation and increased fees for shipping tags on pelts. The Commission expects these fees to be entirely absorbable by passing on this cost to the consumers of bobcat pelts. Private persons, not involved in commerce in bobcat products will not be impacted by any cost.

A statewide ban would impact a small number of licensed trappers who will no longer derive any income from the sale of bobcat pelts. However, licensed trappers could continue to derive income from the legal take of other animals.

(d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None

(e) Nondiscretionary Costs/Savings to Local Agencies: None

(f) Programs Mandated on Local Agencies or School Districts: None

(g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None

(h) Effect on Housing Costs: None

VII. Economic Impact Assessment

For purposes of this Economic Impact Assessment the Department considered cost recovery figures based on the statewide 5-year average of 200 licensed bobcat trappers taking an average of 1,070 pelts annually. However given that any increase in fees for trapping bobcats may deter participation in trapping, we have chosen to evaluate the proposed fee structure assuming a 20% decline in both numbers of trappers and numbers of shipping tags sold.

Currently, each trapper is required to purchase an annual trapping license at a cost of $115 (2014) and a CITES shipping tag at a cost of $3 (2014) per pelt. There are a very small number of non-resident and junior trappers who do not contribute significantly to the revenues derived from such sales. It should also be noted that the majority of licensed trappers do not target bobcat. In addition, many trappers are licensed for pest control which does not provide allowance to sell any bobcat pelts taken for depredation purposes. The proposed regulatory requirements and fee changes will not affect the take of bobcats under the authority of a depredation permit issued by the Department.

The total revenue received from bobcat trappers, apart from pest control trappers, over the 2013-2014 commercial bobcat trapping season was about $27,500. The majority of this revenue ($23,000) came from the sale of licenses, and shipping tag sales accounted for an additional $4,500.

Subsection 4155(e), FGC, requires the Commission to:

> "*set trapping license fees and associated fees, including, but not limited to, shipping tags required pursuant to Section 479 of Chapter 6 of Subdivision 2 of Division 1 of Title 14 of the California Code of Regulations, for the 2014–15 season, and any subsequent seasons in which bobcat trapping is allowed, at the levels necessary to fully recover all reasonable administrative and implementation costs of the department and the commission associated with the trapping of bobcats in the state, including, but not limited to, enforcement costs."*

Existing Costs

The Department currently incurs approximately $161,000 in enforcement, management, and administrative costs to implement the bobcat trapping program under existing regulations.

Enforcement Costs

Under current regulations, the Law Enforcement Division expends substantial enforcement effort during the 69 day bobcat trapping season. Twelve officers including a supervising lieutenant put in about 2,000 hours in the field over the season. Along with vehicle mileage, the current costs incurred by the Department in the enforcement and administration of bobcat trapping regulations are approximately $154,000 annually.

Wildlife Program Costs

In addition to enforcement, environmental scientists and scientific aides in the Department's Wildlife Branch and regional offices currently expend about 160 hours annually compiling bobcat harvest data for the annual Bobcat Harvest Report. Total Department costs for this effort are estimated at $6,700.

Option 1 Costs

Regulation Development and Startup Costs

Initial costs associated with both options include Department and Commission

costs associated with the development of the rulemaking. Total rulemaking costs, including overhead, are estimated at approximately $31,300. Although both options are considered in the current rulemaking, much of this effort has been directed at Option 1. We therefore allocated 75% of the total rulemaking cost, or $23,500, to development of Option 1 and $7,800 to Option 2.

The Automated Data License System (ALDS) will incur an item-specific startup cost of approximately $715 to develop and test the proposed bobcat trapping validation item. The ALDS startup cost and non-recurring regulation development and review costs are amortized over a five-year period in the proposed cost recovery fee schedule.

Enforcement Costs

The proposed bobcat trapping closures under Option 1 are projected to increase annual enforcement costs by about 10% to approximately $169,000. This increase is anticipated to result from the increased effort to enforce the new closure areas. Additional investigative time is also likely to be necessary to detect and deter unlawful trapping activity within closure areas supporting high bobcat populations.

Wildlife Program Costs

Bobcat Harvest Reports will continue to be prepared under both options. Under Option 1, the Department will continue to incur the same level of costs as under the existing program, or approximately $6,700 per year. Both options also include development of a Bobcat Management Plan. Under Option 1, the Department envisions developing a more detailed plan requiring approximately three months of staff time at a total cost of approximately $31,600.

Option 2 Costs

Regulation Development and Startup Costs

Initial costs associated with both options include Department and Commission costs associated with the development of the rulemaking. Because the regulatory effort under Option 2 is less complicated than under Option 1, rulemaking costs were estimated at 25% of the total initial rulemaking cost, or $7,800 for Option 2. Since Option 2 proposes a complete ban on bobcat trapping, no further startup costs are expected.

Enforcement Costs

Enforcement costs under a complete trapping ban were estimated based on the anticipated shift from routine patrol activities to a focus on detailed investigative

work necessary to detect and deter unlawful bobcat trapping activity. Wildlife enforcement costs under this scenario were derived using data from past investigations targeting unlawful trappers. A typical recent case involved over 800 hours of officer personnel time over a period of 4.7 months and almost 12,000 vehicle miles. The total cost for this single case was approximately $63,100. If wildlife officers pursue an average of 3 cases per year under Option 2, then total enforcement costs would be approximately $189,000.

Wildlife Program Costs

Bobcat Harvest Reporting would continue under Option 2, although at a reduced level. Without trapping, the annual report would focus on take of bobcats under a hunting license and bobcat hunting tags as well as bobcats taken under the authority of a depredation permit issued by the Department. The Department's cost of preparing the annual report is estimated at 50% of the current effort, or approximately $3,300. A Bobcat Management Plan is proposed under Option 2, but at a similarly reduced level; without trapping, the plan would focus on general habitat conditions and monitoring the level of human-caused mortality through hunting and depredation take. The Department's costs for preparing the Bobcat Management Plan under Option 2 are estimated at 50% of the effort under Option 1, or approximately $16,700.

Table 1. Bobcat Protection Act Implementation Costs by Option

Start up Costs

Cost Description	Hours (Option 1)	Hours (Option 2)	Rate[1]	Existing Baseline Costs	Total Costs (Option 1)	Total Costs (Option 2)
CDFW Startup Costs						
Regulation Development & Review				$ -	$ 17,400	$ 5,800
Validation Item ALDS Development	12	0	$ 59.58	$ -	$ 715	$ -
Startup Subtotal				*$ -*	*$ 18,115*	*$ 5,800*
Overhead			35%	$ -	$ 6,340	$ 2,030
Total Startup Costs				**$ -**	**$ 24,455**	**$ 7,830**
Amortized over 5 years:				**$ -**	**$ 4,891**	**$ 1,566**

Ongoing Costs

Cost Description	Baseline Hours	Hours (Option 1)	Hours (Option 2)	Rate	Existing Baseline Costs	Total Costs (Option 1)	Total Costs (Option 2)
Law Enforcement Costs							
Routine Patrol							
Officer	1,400	1,540		$ 49.21	$ 68,894	$ 75,783	$ -
Lieutenant	200	220		$ 56.38	$ 11,276	$ 12,404	$ -
Vehicle costs (Mileage)	18,750	20,625		$ 0.565	$ 10,594	$ 11,653	$ -
Case Investigation							
Officer Investigation	400	440	2,445	$ 49.21	$ 19,684	$ 21,652	$ 120,318
Vehicle costs (Mileage)	6,250	6,875	35,331	$ 0.565	$ 3,531	$ 3,884	$ 19,962
Enforcement Subtotal					*$ 113,979*	*$ 125,377*	*$ 140,280*
Overhead				35%	$ 39,893	$ 43,882	$ 49,098
Total Enforcement Costs					**$ 153,872**	**$ 169,259**	**$ 189,379**
Wildlife Program Costs							
Harvest Report							
Harvest Report: Data Entry Staff - Scientific Aid	80	80	40	$ 13.90	$ 1,112	$ 1,112	$ 556
Harvest Report: Data Analysis - Environmental Scientist C	80	80	40	$ 48.08	$ 3,846	$ 3,846	$ 1,923
Management Plan							
Management Plan: Data Analysis - Environmental Scientist C		400	200	$ 48.08	$ -	$ 19,232	$ 9,616
Management Plan: GIS - Research Program Specialist II		60	40	$ 55.24	$ -	$ 3,315	$ 2,210
Management Plan: Scientific Aid		60	40	$ 13.90	$ -	$ 834	$ 556
Wildlife Program Subtotal					*$ 4,958*	*$ 28,338*	*$ 14,860*
Overhead				35%	$ 1,735	$ 9,918	$ 5,201
Total Wildlife Program Costs					**$ 6,693**	**$ 38,256**	**$ 20,062**
Ongoing Costs Total					**$ 160,565**	**$ 207,515**	**$ 209,440**
Amortized Startup Costs (from Above)					$ -	$ 4,891	$ 1,566
Regulatory Option Annual Costs					**$ 160,565**	**$ 212,406**	**$ 211,006**

1 Rates include wages and benefits together and overhead separately
Sources: California Department of Human Resources, California Department of Fish and Wildlife Accounting Branch, Law Enforcement Division, Wildlife Branch, Regulations Unit Analysis.

Proposed Future Work

The implementation costs presented in detail in Table 1 do not include the costs that the Department would incur in developing and implementing an additional bobcat population study as proposed in the Governor's signing message. Extensive field research on bobcat population dynamics would likely only be possible with additional outside funding from the legislature and/or other sources.

Proposed Fee Schedule for Cost Recovery

As shown in Table 1, the Department's implementation costs under Option 1 are approximately $212,000 per year. The Department proposes to recover these costs by apportioning fees between the sales of a new bobcat trapping validation and shipping tags required for bobcat pelts. The Department considered a range of fee combinations for the bobcat trapping validation and the shipping tags based on the assumption that the number of commercial bobcat trapping licenses and tags sold will decline by approximately 20% from the 5-year average of 200 trappers and 1,070 tags sold.

Table 2: Range of potential fee combinations for cost recovery under proposed Option 1 based on projected annual sales of 160 Trapping Validations and 860 Shipping Tags.

Recovery Ratio Tags	/ Validations	CITES Tag	Bobcat Validation
0%	100%	$0	$1,325
1%	99%	$3	$1,309
2%	98%	$5	$1,298
4%	96%	$10	$1,271
6%	94%	$15	$1,244
8%	92%	$20	$1,218
10%	90%	$25	$1,191
12%	88%	$30	$1,164
14%	86%	$35	$1,137
16%	84%	$40	$1,110
18%	82%	$45	$1,083
22%	78%	$55	$1,029
26%	74%	$65	$976
30%	70%	$75	$922
34%	66%	$85	$868
39%	61%	$95	$814
43%	57%	$105	$761
47%	53%	$115	$707
51%	49%	$125	$653
55%	45%	$135	$599
59%	41%	$145	$546
63%	37%	$155	$492
67%	33%	$165	$438
71%	29%	$175	$384
75%	25%	$185	$331
79%	21%	$195	$277
83%	17%	$205	$223
87%	13%	$215	$169
91%	9%	$225	$116
95%	5%	$235	$62
100%	0%	$245	$0

All fees are subject to annual price indexing in accordance with Section 713, FGC.

The Department's recommended range of allocation options is highlighted in Table 2. The bobcat validation fee is proposed as an additional authorization for any licensed trapper intending to take bobcats, whether for personal use or pelt sales. This charge is proposed to be in addition to the basic resident trapping license fee of $115. The shipping tag fee is charged for each pelt taken under a trapping license with a bobcat validation, and thus will be a variable cost depending on the number of pelts shipped by each trapper.

The proposed price change on the shipping tag is anticipated to be perceived as more directly cutting into an individual trapper's profit per pelt. The validation is in a sense a "sunk cost" and will effectively diminish as a per unit operating cost with each additional pelt taken. How many bobcats a trapper will take is an unknown at the beginning of the season, so how much the validation expense cuts into a trapper's profit per pelt is also an unknown. Since the tag price is a more readily apparent per pelt levy on a trapper's net income, it is anticipated that higher shipping tag fees may incentivize unlawful behavior to evade the additional charges. For comparison, the price for a shipping tag is $5 in Nevada and $3 in Arizona. Some trappers may be willing to take the risk of transferring their pelts to states with lower shipping tag fees. While this violates several laws, fee setting should be mindful of any possible unintended consequences.

Given the potential for unlawful out-of-state pelt transfers, the maximum tag fee is proposed to be around $35 per pelt. Assuming 160 bobcat validations sold and 860 shipping tags sold, the constraints of price allocation between the two items supports shipping tag fees set at $35, and the bobcat validation fee set at $1,137. Conceivably the combinations of shipping tags and bobcat validation fees to either side of the $35/$1,137 combination might also be feasible without disrupting trapping activity to the point that declining participation would impact the Department's ability to recover program costs. These other combinations are a $30 shipping tag fee with a bobcat validation at $1,164 or a $40 shipping tag fee with the bobcat validation at $1,110.

Bobcat pelts prices vary depending on market demand, supply of pelts, and pelt quality. Reported prices for quality pelts have reached highs of $1200. Bobcat pelts sold at the 2015 fur auction in Fallon, Nevada, had an average price of $330 (http://www.nvtrappers.org/Fur%20Sale%20Reports/fallon_2015.htm). At the $35 rate, the proposed shipping tag fee would represent about 10% of the average pelt price.

Under the proposed fee structure of $35 per shipping tag and $1,137 per validation, the compliance cost to an individual bobcat trapper with the median take of 10 bobcat pelts would be:

General trapping license	$115
Bobcat trapping validation	$1,137

Pelt shipping tag ($35 each x10)	$350
Total Compliance Cost (10 pelts)	$1,602

The market price for bobcat pelts would affect the reasonableness of these costs for each trapper. With the assumption of 10 pelts per season, the trapper cost per pelt would be approximately $160. The three percent ALDS fee, individual trapper travel and equipment costs are not included in this illustration as this regulatory action does not affect those costs directly.

The response of trappers to new fees will impact the probable revenue collected to recover the costs of this regulatory action. The Option 1 partial closure will have increased costs over current Department costs but the proposed new fees are intended to fully recoup those new costs. Under a complete prohibition, Department costs are projected to be somewhat higher than those incurred currently, with no commercial bobcat trapping fee revenue to offset costs.

(a) Effects of the regulation on the creation or elimination of jobs within the State

Option 1 - The cumulative effects of the changes statewide are estimated to be neutral to the creation or elimination of jobs in California. Although some decrease in trapping effort may result from the increase in fees, no effects on the creation or elimination of jobs are expected because of the relatively small number of bobcat trappers affected.

Option 2 - The cumulative effects of the changes statewide are estimated to be neutral to the creation or elimination of jobs in California. A statewide ban on bobcat trapping will only affect those licensed trappers seeking bobcat and then only to the extent that this seasonal part of their business is eliminated.

(b) Effects of the regulation on the creation of new businesses or the elimination of existing businesses within the State

Option 1 - The cumulative effects of the changes statewide are estimated to be neutral to the creation or elimination of businesses in California. Although some decrease in trapping effort may result from limiting the areas of the state where bobcat trapping is permitted and the increase in fees, no effects on the creation or elimination of jobs are expected because the regulatory action will affect a limited season (2.5 months) for a relatively small number of bobcat trappers.

Option 2 - The cumulative effects of the changes statewide are estimated to be neutral to the creation or elimination of businesses in California. A statewide ban on bobcat trapping will only affect the small number of licensed trappers seeking bobcat and then only to the extent that this seasonal part of their business is eliminated.

(c) Effects of the regulation on the expansion of businesses currently doing business

within the State

Option 1 - The cumulative effects of the changes statewide are estimated to be neutral to the expansion of businesses in California. The regulation may have a limiting effect on trappers and is unlikely to expand business.

Option 2 - The cumulative effects of the changes statewide are estimated to be neutral to the expansion of businesses in California. A statewide ban on bobcat trapping may have a limiting effect on trappers and is unlikely to expand business.

(d) Benefits of the regulation to the health and welfare of California residents

The proposed regulations are anticipated to potentially increase the welfare of California residents through the enhancement of non-consumptive use benefits. Non-consumptive uses that could increase include: the sighting of bobcats in the wild and the perceived value of the bobcat population's contribution to ecosystem functioning.

(e) Benefits of the regulation to worker safety

The proposed regulations are not anticipated to impact worker safety conditions.

(f) Benefits of the regulation to the State's environment

The proposed regulations are in response to the requirements of Section 4155, Fish and Game Code. The statute and regulations will benefit the state's bobcat population by either: Option 1 - extending the protected area where bobcat trapping is already prohibited within national and state parks, national monuments and wildlife refuges; or, Option 2 – a statewide ban on bobcat trapping.

Informative Digest/Policy Statement Overview

Amend sections 478, 479, and 702, Title 14, California Code of Regulations.

The statutory mandate to promulgate regulations to place restrictions on bobcat trapping is set forth in Fish and Game Code Section 4155, the Bobcat Protection Act of 2013, which states in subsection (b)(1):

> "Through the commission's next regularly scheduled mammal hunting and trapping rulemaking process occurring after January 1, 2014, the commission shall amend its regulations to prohibit the trapping of bobcats adjacent to the boundaries of each national or state park and national monument or wildlife refuge in which bobcat trapping is prohibited."

In addition, Fish and Game Code Section 4155(e) directs the Commission to set trapping license fees and associated fees at the levels necessary to fully recover all reasonable administrative and implementation costs of the department and the commission associated with the trapping of bobcats in the state, including, but not limited to, enforcement costs. A range of potential fees is presented with the recommended fee combination of $35 per shipping tag and $1,137 for the proposed Bobcat Trapping Validation. The proposed regulatory changes will not affect the take of bobcats with a hunting license and bobcat hunting tags under subsection 478.1, or under a depredation permit issued pursuant to Section 401.

PROPOSED REGULATORY CHANGES

Option 1: Partial closure of the state to bobcat trapping and establishing property-specific closure boundaries around protected areas.

- Amend Section 478, Bobcat, by adding descriptions of a statewide "Bobcat Trapping Closure Area" and 18 "Property-Specific Closure Areas" surrounding 23 protected areas and incorporate editorial changes and re-numbering of the text for clarity.
- Amend Section 702, Fees, by adding a new subsection (d)(1) to require (in addition to the trapping license fee set forth in the Fish and Game Code) the payment of a Bobcat Trapping Validation Fee set at $[0 – 1,325] and subject to annual adjustment.
- Amend Section 479, Bobcat Pelts, by moving the current bobcat pelt shipping tag fee from subsection (c)(5); and Amend Section 702, Fees, adding a new subsection (d)(2), Shipping Tags, and increasing the fee from $3 to $[0 - 245] and subject to annual adjustments. Additionally, there are editorial changes and re-numbering of the text for clarity.
- Amend Section 479 by deleting the 'no cost' provision and 'department mark' on pelts not for sale in subsection (a)(1), each pelt will be required to have a Department issued shipping tag; and, by eliminating the listed Method of Take in subsection (c)(4).

Option 2: Total prohibition on bobcat trapping in California.

- Amend Section 478 by prohibiting bobcat trapping throughout California.
- Amend Section 479 eliminating pelt tags, fees, and department marks for bobcats taken by trapping.

BENEFITS OF THE PROPOSED ACTION:

The benefits of the proposed regulations to the environment, whether of a partial trapping ban as described in Option 1, or a full ban as described in Option 2, will be through the improved protection of bobcat populations and the enhancement of non-consumptive use benefits. Non-consumptive uses anticipated to potentially increase include: the observation of bobcats in the wild and the perceived value of the bobcat population's contribution to ecosystem functioning.

EVALUATION OF INCOMPATIBILITY WITH EXISTING REGULATIONS:

Section 20, Article IV, of the State Constitution specifies that the Legislature may delegate to the Fish and Game Commission such powers relating to the protection and propagation of fish and game as the Legislature sees fit. The Legislature has delegated to the Commission the power to regulate the commercial trapping of bobcat. No other State agency has the authority to promulgate such regulations. The Commission has searched the CCR for any regulations regarding bobcat trapping and has found no such regulation; therefore the Commission has concluded that the proposed regulations are neither inconsistent nor incompatible with existing State regulations.

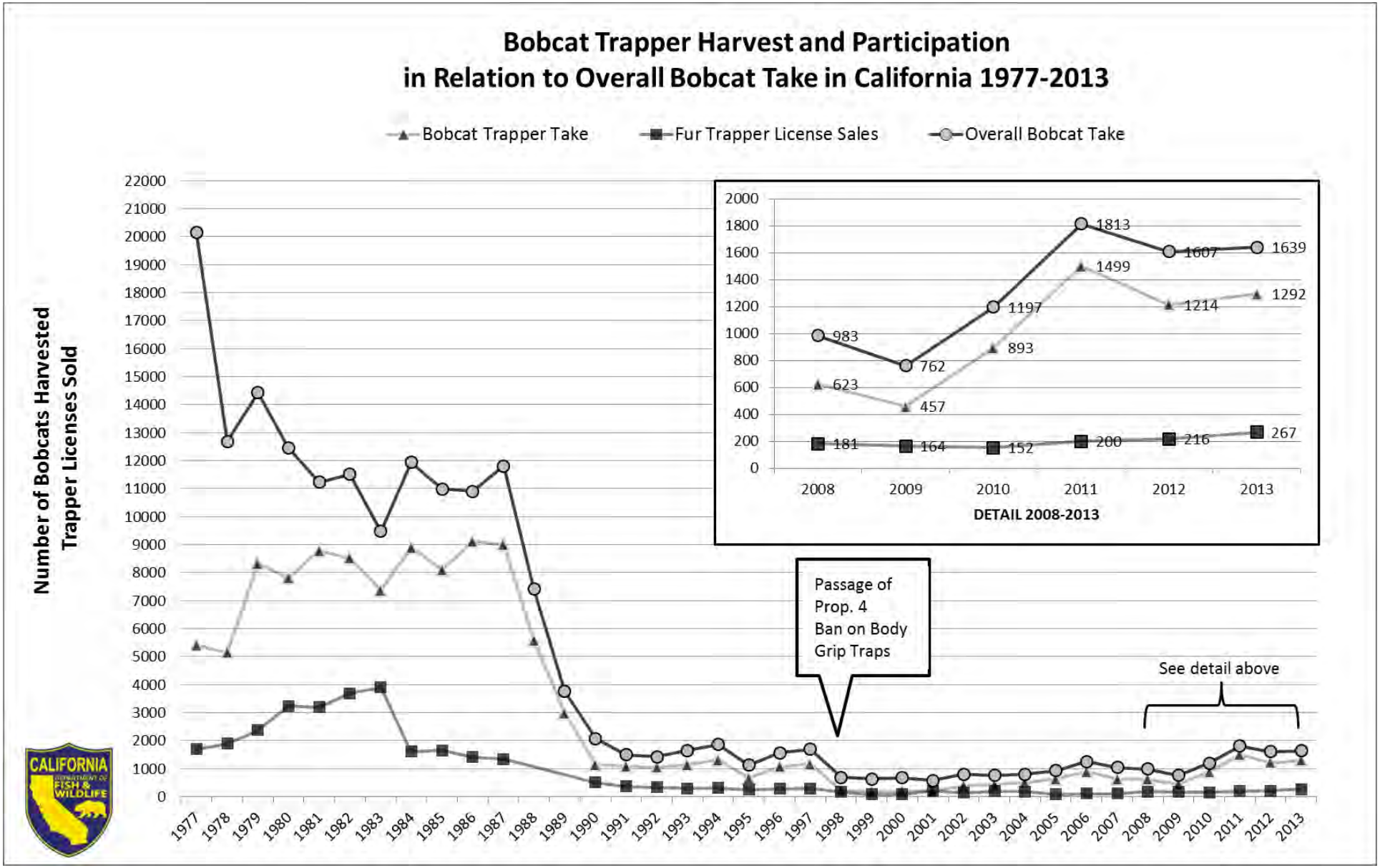

Bobcat Trapper Harvest and Participation
in Relation to Overall Bobcat Take in California 1977-2013
Bobcat Trapper Take
Fur Trapper License Sales
Overall Bobcat Take
Number of Bobcats Harvested
Trapper Licenses Sold
Passage of Prop. 4 Ban on Body Grip Traps
See detail above
DETAIL 2008-2013
983
762
1197
1813
1607
1639
623
457
893
1499
1214
1292
181
164
152
200
216
267
CALIFORNIA
FISH & WILDLIFE

EXHIBIT A

LIST OF PROTECTED PROPERTIES AS REQUIRED IN SECTION 4155, FGC. (national or state park and national monument or wildlife refuge)

(Properties not identified as Specific are incorporated into the statewide Bobcat Trapping Closure Area 478(d)

Property Specific Closure Areas Section 478	Property Type	PROPERTY NAME	Property Specific Closure Areas Section 478	Property Type	PROPERTY NAME
	State Park	Ano Nuevo SP		State Park	MacKerricher SP
	State Park	Agua Caliente County Park (ABDSP)		State Park	Malakoff Diggins SHP
e(1)	State Park	Ahjumawi Lava Springs SP		State Park	Malibu Creek SP
	State Park	Anderson Marsh SHP		State Park	Manchester SP
	State Park	Andrew Molera SP		State Park	Marconi Conference Center SHP
	State Park	Angel Island SP		Refuge	Marin Islands National Wildlife Refuge
	State Park	Annadel SP		State Park	Marsh Creek State Park (SHP)
	State Park	Antelope Valley Indian Museum (SHP)		State Park	Marshall Gold Discovery SHP
	State Park	Anza-Borrego Desert SP	**e(1)**	State Park	McArthur-Burney Falls Memorial SP
e(2)	State Park	Arthur B. Ripley Desert Woodland SP		State Park	McLaughlin Eastshore SP
	State Park	Bale Grist Mill SHP		State Park	Mendocino Headlands SP
	State Park	Bidwell Mansion SHP		State Park	Mendocino Woodlands SP
	State Park	Bidwell-Sacramento River SP		Refuge	Merced National Wildlife Refuge
	State Park	Big Basin Redwoods SP	**e(12)**	Refuge	Modoc National Wildlife Refuge
e(3)	Refuge	Bitter Creek National Wildlife Refuge		State Park	Montana de Oro SP
	Refuge	Blue Ridge National Wildlife Refuge		State Park	Monterey SHP
e(4)	State Park	Bodie SHP		State Park	Morro Bay SP
	State Park	Border Field SP		State Park	Mount Diablo SP
	State Park	Bothe-Napa Valley SP		State Park	Mount San Jacinto SP
	State Park	Burton Creek SP		State Park	Mount Tamalpais SP
	State Park	Butano SP		National Monument	Muir Woods National Monument
	State Park	Calaveras Big Trees SP		State Park	Navarro River Redwoods SP
	State Park	California Citrus SHP		State Park	Old Sacramento SHP
	State Park	California Indian Heritage Center SP		State Park	Old Town San Diego SHP
e(5)	State Park	Castle Crags SP		State Park	Olompali SHP
	Refuge	Castle Rock National Wildlife Refuge		State Park	Pacheco SP
	State Park	Castle Rock SP		State Park	Palomar Mountain SP
	State Park	Caswell Memorial SP		State Park	Patrick's Point SP

EXHIBIT B

LIST OF PROTECTED PROPERTIES AS REQUIRED IN SECTION 4155, FGC. (national or state park and national monument or wildlife refuge)

(Properties not identified as Specific are incorporated into the statewide Bobcat Trapping Closure Area 478(d)

Property Specific Closure Areas Section 478	Property Type	PROPERTY NAME	Property Specific Closure Areas Section 478	Property Type	PROPERTY NAME
	State Park	China Camp SP		State Park	Petaluma Adobe SHP
	State Park	Chino Hills SP		State Park	Pfeiffer Big Sur SP
e(6)	State Park	Chumash Painted Cave SHP		State Park	Pigeon Point Light Station SHP
e(7)	Refuge	Cibola National Wildlife Refuge		National Park	Pinnacles National Park
e(11)	Refuge	Clear Lake National Wildlife Refuge		Refuge	Pixley National Wildlife Refuge
	State Park	Clear Lake SP		State Park	Placerita Canyon SP
	Refuge	Coachella Valley National Wildlife Refuge		State Park	Plumas-Eureka SP
	State Park	Colonel Allensworth SHP		State Park	Point Cabrillo Light Station SHP
	State Park	Columbia SHP		State Park	Point Mugu SP
	State Park	Crystal Cove SP		State Park	Point Sur SHP
	State Park	Cuyamaca Rancho SP		State Park	Portola Redwoods SP
	State Park	D.L. Bliss SP		State Park	Prairie Creek Redwoods SP
e(8)	National Park	Death Valley National Park		State Park	Pio Pico SHP
	State Park	Del Norte Coast Redwoods SP		State Park	Railtown 1897 SHP
	Refuge	Delevan National Wildlife Refuge	**e(13)**	State Park	Red Rock Canyon SP
	National Monument	Devils Postpile National Monument		National Park	Redwood National Park
	Refuge	Don Edwards San Francisco Bay NWR		State Park	Richardson Grove SP
	State Park	Donner Memorial SP		State Park	Robert Louis Stevenson SP
	State Park	Ed Z'berg Sugar Pine Point SP		State Park	Russian Gulch SP
	State Park	El Presidio de Santa Barbara SHP		Refuge	Sacramento National Wildlife Refuge
	Refuge	Ellicott Slough National Wildlife Refuge		Refuge	Sacramento River National Wildlife Refuge
	State Park	Emerald Bay SP	**e(14)**	State Park	Saddleback Butte SP
	State Park	Empire Mine SHP		Refuge	Salinas River National Wildlife Refuge
	State Park	Estero Bluffs SP		State Park	Salt Point SP
	Refuge	Fallon National Wildlife Refuge		State Park	Samuel P. Taylor SP
	State Park	Folsom Powerhouse SHP		State Park	San Bruno Mountain SP
	State Park	Fort Humboldt SHP		Refuge	San Diego Bay National Wildlife Refuge
	State Park	Fort Ord Dunes SP		Refuge	San Diego National Wildlife Refuge

EXHIBIT B

LIST OF PROTECTED PROPERTIES AS REQUIRED IN SECTION 4155, FGC. (national or state park and national monument or wildlife refuge)

(Properties not identified as Specific are incorporated into the statewide Bobcat Trapping Closure Area 478(d)

Property Specific Closure Areas Section 478	Property Type	PROPERTY NAME	Property Specific Closure Areas Section 478	Property Type	PROPERTY NAME
	State Park	Fort Ross SHP		National Monument	San Gabriel Mountains National Monument
	State Park	Fort Tejon SHP		Refuge	San Joaquin River National Wildlife Refuge
	State Park	Fremont Peak SP		State Park	San Juan Bautista SHP
	State Park	Garrapata SP		Refuge	San Luis National Wildlife Refuge
	State Park	Gaviota SP		Refuge	San Pablo National Wildlife Refuge
	State Park	Governor's Mansion SHP		State Park	San Pasqual Battlefield SHP
	State Park	Great Valley Grasslands SP		State Park	Santa Susana Pass SHP
	State Park	Grizzly Creek Redwoods SP	**e(15)**	State Park	Shasta SHP
	State Park	Grover Hot Springs SP		State Park	Sinkyone Wilderness SP
	Refuge	Guadalupe-Nipomo Dunes NWR		Refuge	Sonny Bono Salton Sea NWR
	State Park	Harmony Headlands SP		State Park	Sonoma Coast SP
e(9)	Refuge	Havasu National Wildlife Refuge		State Park	Sonoma SHP
	State Park	Hearst San Simeon SP		State Park	South Yuba River SP
	State Park	Hendy Woods SP		State Park	State Indian Museum (SHP)
	State Park	Henry Cowell Redwoods SP		Refuge	Stone Lakes National Wildlife Refuge
	State Park	Henry W. Coe SP		State Park	Sugarloaf Ridge SP
	Refuge	Hopper Mountain National Wildlife Refuge		State Park	Sutter Buttes SP
	State Park	Humboldt Lagoons SP		Refuge	Sutter National Wildlife Refuge
	State Park	Humboldt Redwoods SP		State Park	Sutter's Fort SHP
	Refuge	Humbolt Bay National Wildlife Refuge		State Park	The Forest of Nisene Marks SP
e(7)	Refuge	Imperial National Wildlife Refuge		Refuge	Tijuana Estuary NP
	State Park	Indian Grinding Rock SHP		Refuge	Tijuana Slough National Wildlife Refuge
	State Park	Jack London SHP		State Park	Tolowa Dunes SP
	State Park	Jedediah Smith Redwoods SP		State Park	Tomales Bay SP
	National Park	Joshua Tree National Park	**e(16)**	State Park	Tomo-Kahni SHP
	State Park	Julia Pfeiffer Burns SP		State Park	Topanga SP
	Refuge	Kern National Wildlife Refuge	**e(11)**	Refuge	Tule Lake National Wildlife Refuge
	National Park	Kings Canyon National Park		State Park	Van Damme SP
	State Park	La Purisima Mission SHP		State Park	Washoe Meadows SP

EXHIBIT B

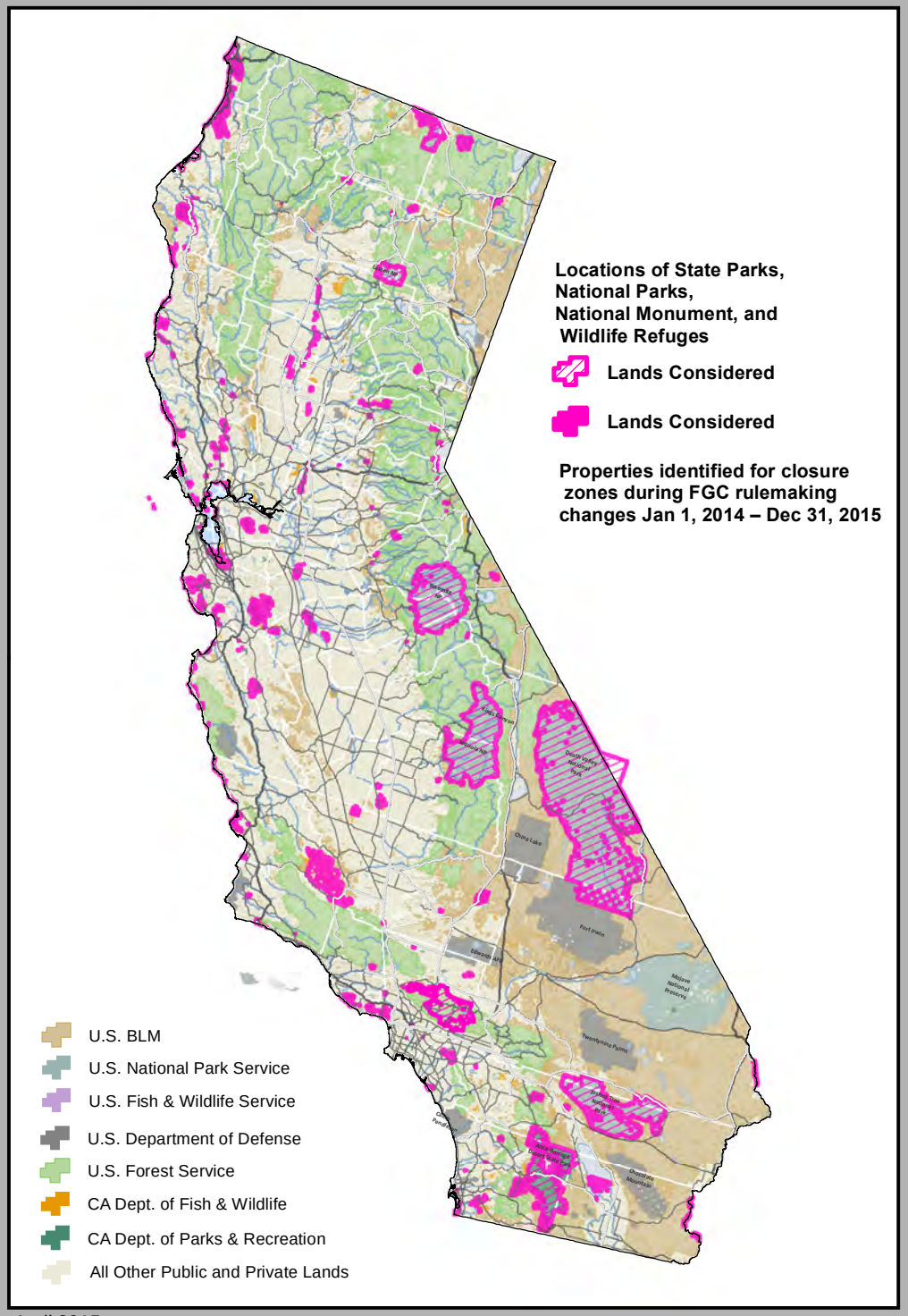
LIST OF PROTECTED PROPERTIES AS REQUIRED IN SECTION 4155, FGC. (national or state park and national monument or wildlife refuge)

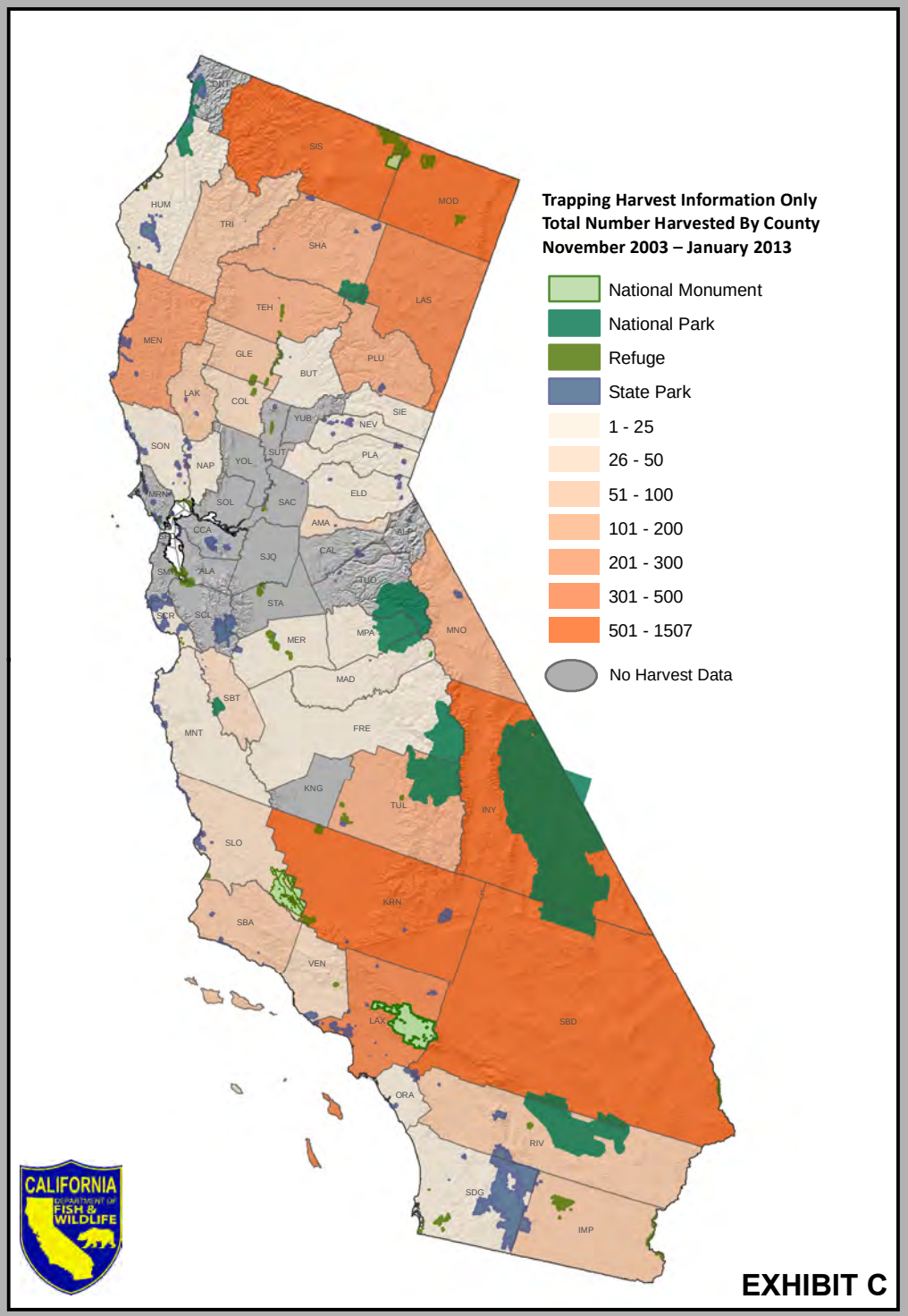
(Properties not identified as Specific are incorporated into the statewide Bobcat Trapping Closure Area 478(d)

Property Specific Closure Areas Section 478	Property Type	PROPERTY NAME	Property Specific Closure Areas Section 478	Property Type	PROPERTY NAME
e(10)	National Park	Lassen Volcanic National Park		State Park	Wassama Round House SHP
e(11)	National Monument	Lava Beds National Monument		State Park	Watts Towers of Simon Rodia SHP
	State Park	Leland Stanford Mansion SHP	**e(17)**	State Park	Weaverville Joss House SHP
	State Park	Leo Carrillo SP		State Park	Wilder Ranch SP
	State Park	Limekiln SP		State Park	Will Rogers SHP
	State Park	Los Angeles SHP	**e(18)**	State Park	William B. Ide Adobe SHP
	State Park	Los Encinos SHP		State Park	Woodland Opera House SHP
e(11)	Refuge	Lower Klamath National Wildlife Refuge		National Park	Yosemite National Park

EXHIBIT B

Lands Requiring Closure under the Bobcat Protection Act (FGC 4155)





April 2015

EXHIBIT D

Proposed Closures to Implement the Bobcat Protection Act (FGC 4155)

April 2015

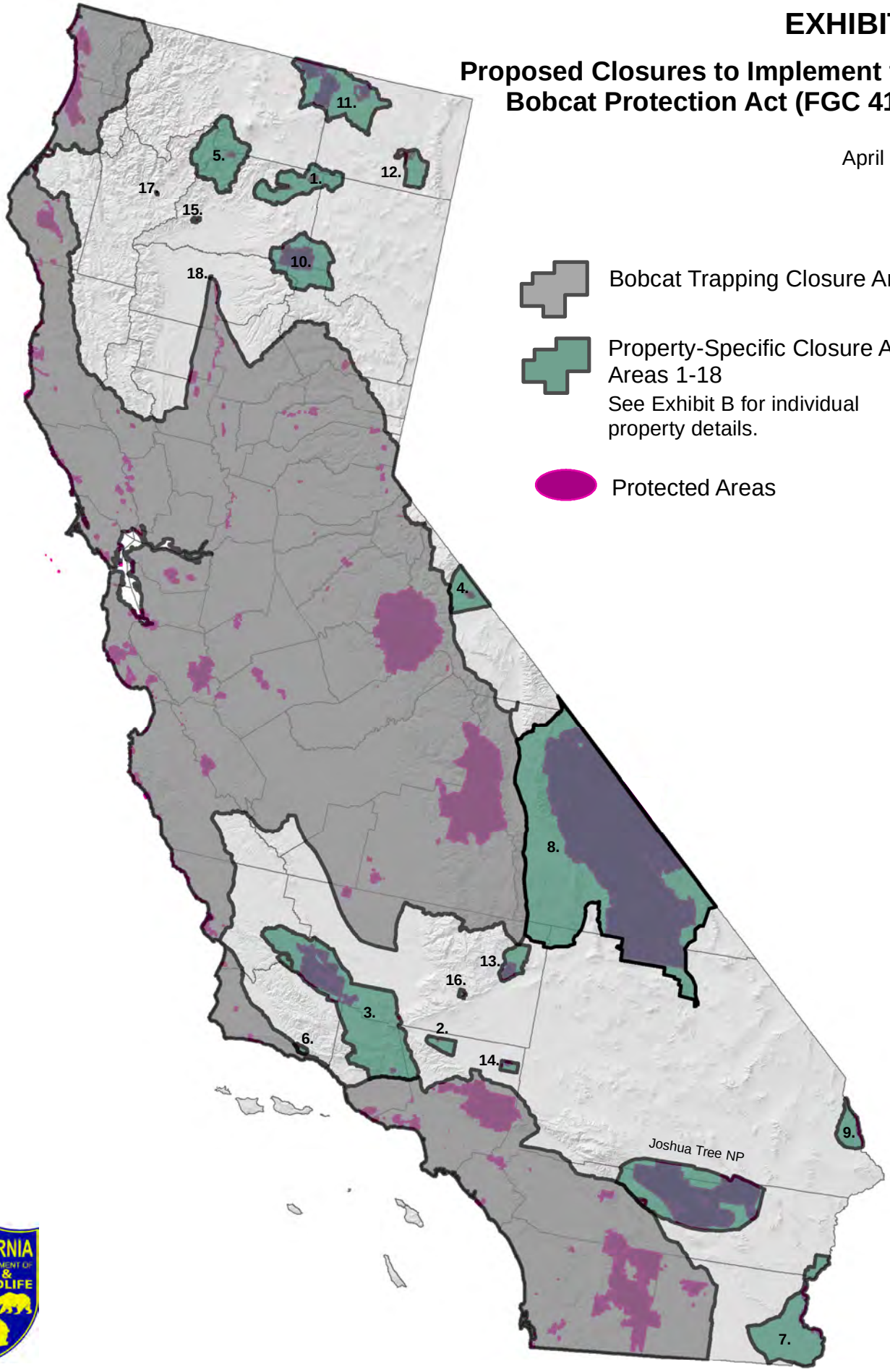
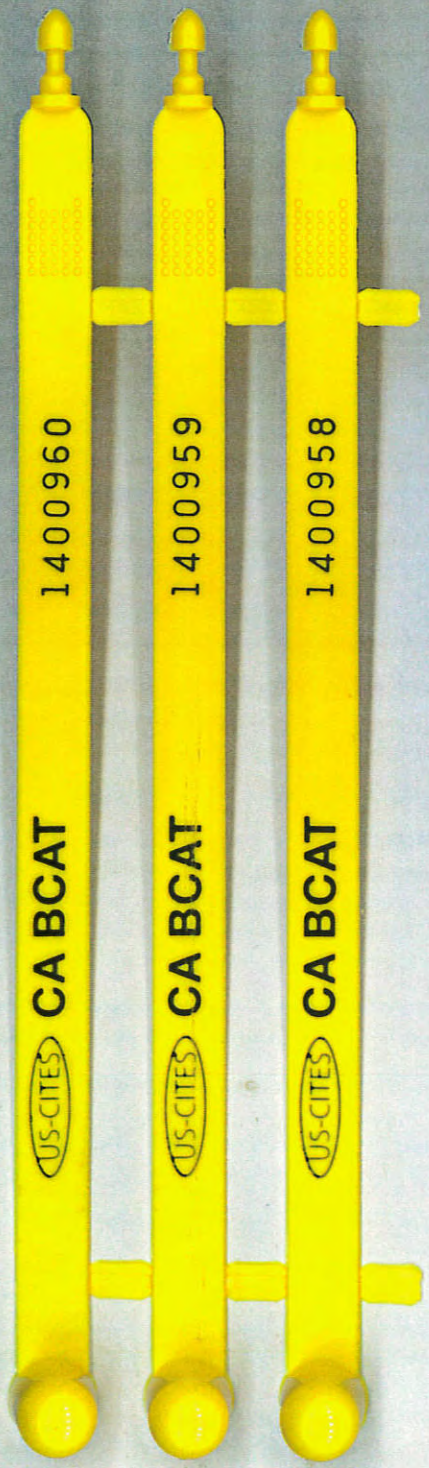


EXHIBIT E
PELT SHIPPING TAGS



Larry Johnston~District One Fred Stump~ District Two Tim Alpers ~ District Three
Tim Fesko ~ District Four Stacy Corless ~ District Five

BOARD OF SUPERVISORS
COUNTY OF MONO

P.O. BOX 715, BRIDGEPORT, CALIFORNIA 93517
(760) 932-5530 • FAX (760) 932-5531

April 7, 2015

Mr. Charlton Bonham, Director (email: director@wildlife.ca.gov)
California Department of Fish and Wildlife
1416 9th Street, 12th Floor
Sacramento, CA 95814

Mr. Sonke Mastrup, Executive Director (email: fgc@fgc.ca.gov)
California Fish and Game Commission
1416 9th Street, Suite 1320
Sacramento, CA 95814

RECEIVED AT
APR 09 2015
COMMISSION MEETING
AGENDA ITEM 29
Did not attend
Written comment delivered

Re: Actions of the Fish and Game Commission, December 2014 meeting relative to implementation of AB 1213 (Chapter 748, Statutes of 2013)

Dear Mr. Bonham and Mr. Mastrup:

The Mono County Board of Supervisors wished to provide the following for consideration prior to the adoption regulations for the implementation of AB 1213. Mono County is a community with a deep appreciation for natural resources and seeks to ensure that state legislation and regulations which seek to protect those resources reflect our County's ongoing commitment to preserving them for future generations.

At the Fish and Game Commission Meeting scheduled for April 8th and 9th in Sonoma County, it is our understanding the Commission will continue its deliberation on the implementation of AB 1213 from 2013, the Bobcat Protection Act of 2013. The Board is requesting the Commission consider the following prior to the development of final Rulemaking for ab 1213:

1) The State consider including all of Mono County in the temporary ban of trapping of Bobcats until the State completes its population survey of the Bobcats. Continue depredation of this species without this data would seem to endanger its longevity. Our Board requires additional data to help better inform future trapping efforts.

If the Commission or State Department of Fish and Wildlife cannot proceed with Option 1) above then the Board is requesting that:

2) The Commission consider establishing in Mono County buffer zones for protection of the Bobcats around any and all State parks, National Parks, Mono County scenic resources and specifically within the Mono Basin National Forest Scenic Area until the population study is completed.

As we understand that the Commission's June 2015 meeting will be held in Mono County, we expect there to be ample and additional public comment on this matter. We offer our County's collaboration in working with State agencies on this issue so that both the natural resources of Mono County are preserved while the issue of trapping is thoroughly reviewed by regulatory agencies. Thank you for your consideration.

Sincerely,

Timothy E Fesko, Chair, Mono County Board of Supervisors

Cc: Governor Edmund G Brown, Jr

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2015 APR -9 AM 10:19

MCS

Range of Light Group
Toiyabe Chapter, Sierra Club
Counties of Inyo and Mono, California
P.O. Box 1973, Mammoth Lakes, CA, 93546
Rangeoflight.sc@gmail.com

SIERRA CLUB
FOUNDED 1892

April 2, 2015

Mr. Sonke Mastrup
Executive Director
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814
(Copy to: fgc@fgc.ca.gov)

Subject: April 9, 2015 meeting, agenda item # 29: Bobcat trapping regulations

Dear Mr. Mastrup:

The Range of Light Group (ROLG) of Sierra Club (Toiyabe Chapter) provides these comments on possible changes to bobcat trapping regulations: agenda item # 29, scheduled for discussion at the Commission's meeting on April 9 (day 2 of the 2 day meeting).

The Range of Light Group has approximately 400 members, most of whom live in Mono and Inyo Counties. ROLG represents the Sierra Club in Inyo and Mono Counties focusing on the areas of outings, education, and protecting the environment including its flora and fauna. These activities include participation as a group and as individuals in various conservation/restoration projects.

The Mono Basin is within the geographical area of our group. Many of our members recreate in the Mono Basin area. Some are volunteers for conservation and education activities conducted in the Basin. A number of our members also belong to the Mono Lake Committee. Our group is concerned to protect the ecological integrity of the Mono Basin as well as its attractiveness to local users and visitors. Mono Lake and the adjacent area is a significant contributor to the economic health of Mono County.

We understand that the Mono Lake Committee has submitted comments supporting designation of the Mono Basin watershed as a regional "no trapping" zone, as allowed for implementation in 2016 under AB 1213. We are aware that a statewide ban on bobcat trapping has been proposed and discussed and realize that should such a ban be adopted then a separate "no trapping" designation for the Mono Basin watershed would not be necessary.

We appreciate that one of the concerns of the Fish and Game Commission (FGC) in establishing "no trapping" zones relates to the zone having recognizable and enforceable boundaries. ROLG feels that boundary designation is more of a problem in the case of hunting than it is for trapping. Most bobcat trapping is done by a small number of commercial trappers. In the age of readily available, inexpensive GPS devices, including GPS apps on smart phones, it is reasonable to expect that these commercial trappers be responsible for respecting the boundaries of "no-trapping" zones so long as the boundaries are readily available. Of course, where possible, we recommend clearly observable boundaries such as roads and already demarcated boundaries of wilderness areas. We urge the Commission to work with the Mono Lake Committee (as well as with the various other state and federal agencies) to ascertain and establish the best boundaries for a "no-trapping" zone in the Mono Basin Watershed.

Although bobcat trapping numbers in Mono County vary from year to year, and area to area within the county, there has over time been a significant increase in the number of bobcats trapped and killed. As long as the foreign demand for bobcat pelts remains high, it is likely that the increased number of bobcats trapped will remain constant or very possibly increase further (unless over-trapping eventually leads to a decline in numbers trapped). Wildlife biologists are increasingly aware of the many negative impacts to the ecological integrity of an area that result from significant reduction in the natural number of a predator species (such as the bobcat). A "no-trapping" zone designation for the Mono Basin watershed will help enhance the health and naturalness of the area which accounts for its attractiveness to local as well as non-local visitors (including many foreign visitors) who are attracted by the basin's wild nature and ecological integrity. A "no-trapping" designation will also enable the area to serve as a safe reservoir from which replenishment (recruitment) can occur should bobcat populations outside the "no-trapping" area decline to undesirable levels.

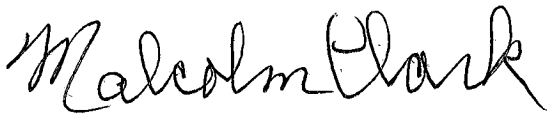
One of the problems regarding the sustainability of the bobcats in our area (and statewide) is the lack of reliable recent data, and data over time, regarding bobcat numbers. We are informed that the Bishop Bureau of Land Management (BLM) region has recently begun a ten year project to obtain reliable information about the number of bobcats in our area. From this data hopefully conclusions can be made regarding the actual existing numbers, the optimal and minimum desirable populations from an ecological perspective, and the natural range of variability of the population from year to year and region to region. We commend the BLM for this study and hope the state will follow through on the governor's desire expressed when signing AB1213 that bobcat survey(s) be undertaken. At the same time and given the significant increase in the number of trapped bobcats annually, we do not think it prudent to wait for ten years for the conclusion of the BLM study in order to determine appropriate measures such as the establishment of a "no-trapping" zone in the Mono Basin watershed. Ultimately, it may also be desirable to establish "limits" on the number of bobcats that can be trapped by an individual trapper annually, or limits on total "take" annually within specific regions and perhaps revision of the total annual statewide take allowed.

The governor's message upon signing AB1213 also mentioned the need to secure adequate funding to finance study of the bobcat population in the state. As most trapping is done as a commercial enterprise, we feel that license and tag fees should be set at such a level as to provide the needed funding for such study as well as for enforcement of trapping regulations (as provided for in AB1213).

We do not know the extent to which (if at all) bobcats were traditionally hunted or trapped by the several Paiute tribes of Mono and Inyo County. We understand that traditional Paiute usages are upheld within the Mono Basin Scenic Area. We expect that traditional Paiute usages as regards bobcat hunting and trapping be recognized and upheld where applicable in any changes in regulations and "no-trapping" zones while at the same time maintaining optimal populations for the well ecological integrity.

Thank you for the opportunity to provide these comments.

Sincerely,



Malcolm Clark, conservation chair
Range of Light Group, Toiyabe Chapter, Sierra Club
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wmalcolm.clark@gmail.com (my email)
PO Box 1973 (Range of Light mail box)
PO Box 3328, Mammoth Lakes, CA 93546 (my mail box)
760-924-5639 (my phone, land line)

TRINITY COUNTY

Board of Supervisors

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COMMISSION
2015 APR 28 PM 5:42 MLS

April 21, 2015

California Fish and Game Commission
PO Box 944209
Sacramento, CA 94244-2090

Dear Commissioners:

This letter is in regards to the implementation to AB1213 which refers to the management of bobcat trapping. It has come to our attention that the Department of Fish and Wildlife is recommending a zone concept with a north and a south zone open to bobcat trapping. The intent of the act is to create buffer zones excluding bobcat trapping around state parks, refuges, national parks, monuments, and others areas deemed appropriate; there are 200 plus areas in the state. Considering the enormity of the acts intended task, we think the Departments recommendation of just two zones to be the most practical approach to administer this designation.

It has also been brought to our attention that the commission is considering an alternative statewide ban on bobcat trapping as a management strategy to be implemented under this act. It will remove trapping as a management tool for the Department and eventually the bobcat population will exceed the carrying capacity of its habitat and become a public nuisance as the mountain lion has become. In the interest of our constituency, we cannot be supportive of this alternative.

We realize that your charge as a commission and the Department is very complex considering the diversity of California. Perhaps a logical compromise is a limit on the number of bobcats taken. The Department and its professional staff would establish such a limit.

Thank you for your consideration.

Sincerely,

Judy Morris, Chairman
Trinity County Board of Supervisors

Cc: The Honorable Mike McGuire, Member of the California State Senate
The Honorable Jim Wood, Member of the California State Assembly
Mr. Irl Everest
Trinity County Fish and Game Advisory Commission

April 10, 2015

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2015 APR 21 PM 1:
MLS

Mr. Sonke Mastrup Executive Director
California Fish & Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Support for a state wide ban on bobcat trapping in California

Dear Mr. Mastrup,

I am a concerned citizen and speak on behalf of my California native neighbors, the bobcats. I would VERY MUCH like to see a complete ban on bobcat trapping. I live in a rural area and enjoy many species of wild animals including bobcats. We have a resident bobcat that has lived on our land for the last 4 years. Even though I have cats and small dogs there has never been any problems. The bobcat likes to gopher hunt and lounge in the sun. Bobcats pose very little threat to humans, unless of course you are a hobbyist chicken farmer. In that case, bobcats offer the lesson of how to build a sound chicken coop. They are majestic, small predators that should be respected and protected for future generations. The human community is so terrified of predator animals that many species will slowly disappear. But with the bobcats small size and disinterest in harming humans and large livestock, there is a great responsibility to protect them in the wild.

I see that many of the opponents of this bill are from hunting and trapping groups and their biggest argument is that the Governor, in his signing of AB 1213, called for a bobcat population survey. This is used by the opponents to proclaim that until this is done there is no reason to protect the bobcat and that this isn't "sound science". This thought process is ridiculous! This is the thought process of a young child that wants something. Sound science would be to protect the animal and its numbers in the wild while waiting for the population survey to come in. What if we find out that the population of bobcats is catastrophically low? Should people really be trapping bobcats, with no bag-limit, before we know? I would think that common sense can answer this question.

Another argument by opponents seems to be that bobcats could get so vast in numbers (if not trapped) so as to perhaps, take over California. This doesn't seem to be a problem in nature, other then with regards to humans. Animals have a very keen ability to procreate in stable numbers to their given environment. If you take trapping out of the equation, they still have much stacked against them with loss of habitat to human construction, roadways, pesticides, loss of accessible water, etc.

I have read that there are fewer then 100 commercial trappers harvesting bobcats. This number represents a bleak few to the majority of citizens who find this practice a disgusting disregard to our natural resource management . Wildlife is considered to be a public asset and should not be used for the profit of the few.

It is clear that a state wide ban is simpler and more economical than determining boundaries, methods for determining those boundaries, creating documentation describing boundaries and regulations. There will be constant letters, groups, speakers voicing for new areas of land and parks to be included in the protected group. Also buffer zones around protected areas must be considered with the territory and linkage needs of the protected population in mind.

If this ban is NOT implemented then a major overhaul of trapping laws needs to take place. First and foremost a reasonable bag limit needs to be established. There is a limit on hunting, which is a more difficult task then checking traps, why none on trapping? Trapping fees need to be raised substantially in order to make sure that the profit margin on pelts to China is not sustainable. This would weed out the need to trap in the first place.

These are just a few points to be made on behalf of the bobcats. There are thousands of years of natural history pointing to the fact that bobcats are important residence of California and have a significant role in the ecology that surrounds us. Please, please, please do what is right for the California majority and vote yes on banning bobcat trapping.

Sincerely,

Emily Sawyer

[redacted]