Fish and Game Commission
Meeting Binder

November 4, 2015

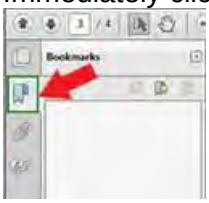
Marine Resources Committee
Meeting

Ventura

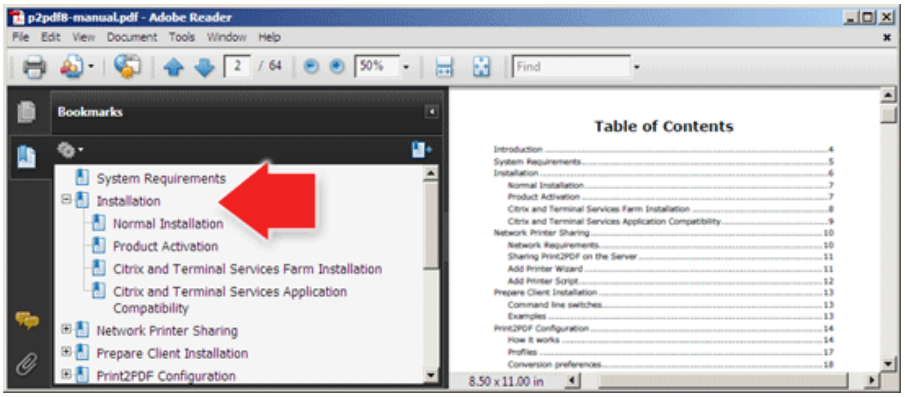
EASY GUIDE TO THE BINDER

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 COMMITTEE MEETING

- Our goal today is informed discussion to guide future decision making, and, we need your cooperation to ensure a lively and comprehensive dialogue.

- We are operating under Bagley-Keene Open Meeting Act, but the Committee is not a decision making body and only makes recommendations to the full Commission for possible action.

- These proceedings may be recorded and posted to our website for reference and archival purposes.

- Items may be heard in any order pursuant to the determination of the Committee Co-Chairs.

- In the unlikely event of an emergency, please locate the nearest emergency exits.

- Restrooms are located _____.

- Committee meetings operate informally and provide opportunity for everyone to provide 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.
    2. Provide your name, affiliation (if any), and the number of people you represent.
    3. Time is limited; please keep your comments precise to give others time to speak.
    4. If several speakers have the same concerns, please appoint a group spokesperson.
    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 comment, the subject matter you present should <u>not be related</u> to any item on the current agenda (public comment on agenda items will be taken at the time the Committee members discuss that item).

- **Warning!** Laser pointers may only be used by a speaker during a presentation.

INTRODUCTIONS FOR FISH AND GAME COMMISSION MARINE RESOURCES COMMITTEE

FISH AND GAME COMMISSIONERS

Eric Sklar	Co-Chair (Saint Helena)
Anthony Williams	Co-Chair (Huntington Beach)

COMMISSION STAFF

Sonke Mastrup	Executive Director
Susan Ashcraft	Marine Advisor
Mary Brittain	Administrative Assistant

DEPARTMENT OF FISH AND WILDLIFE

David Bess	Deputy Director and Chief, Law Enforcement Division
Bob Puccinelli	Captain, Law Enforcement Division
Craig Shuman	Manager, Marine Region
Tom Barnes	State Fisheries Program Manager, Marine Region

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

_____

_____

_____

_____

_____

Commissioners
Jack Baylis, President
Los Angeles
Jim Kellogg, Vice President
Discovery Bay
Jacque Hostler-Carmesin, Member
McKinleyville
Eric Sklar, Member
Saint Helena
Anthony C. Williams, Member
Huntington Beach

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
www.fgc.ca.gov

MARINE RESOURCES COMMITTEE

Committee Co-Chairs: Commissioner Sklar and Commissioner Williams

MEETING AGENDA
November 4, 2015, 9:30 a.m.

Four Points by Sheraton Ventura Harbor Resort
1050 Schooner Dr., Ventura

This meeting may be audio-recorded

NOTE: Please see important meeting procedures and deadline information at the end of the agenda. 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. Call to order / roll call to establish quorum
2. Approve agenda
3. Public forum for items not on agenda
4. Agency updates
5. Update on Red Abalone Fishery Management Plan
6. Update on master plan for marine protected areas review and revision process
7. Overview of Marine Life Management Act master plan review and revision process
8. California's fishing communities: initial scoping
9. Update on approach to amending kelp and algae harvest regulations
10. Update on topics previously before the Committee
    - (A) Fisheries Bycatch Workgroup
    - (B) Pier and Jetty Fishing Review
    - (C) Other
11. Adjournment

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

MEETING DATE	COMMISSION MEETING	COMMITTEE MEETING
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

- November 14-19, Garden Grove, CA

Wildlife Conservation Board

- November 19, Sacramento, CA

IMPORTANT COMMITTEE MEETING PROCEDURES INFORMATION

Welcome to a meeting of the California Fish and Game Commission's Marine Resources Committee. The Committee is chaired by up to two Commissioners. These assignments are made by the Commission.

The goal of the Committee is to allow greater time to investigate issues before the Commission than would otherwise be possible. Committee meetings are less formal in nature and provide for additional access to the Commission. The Committee follows the noticing requirements of the Bagley-Keene Open Meeting Act. It is important to note that the Committee chairs cannot take action independent of the full Commission; instead, the chairs make recommendations to the full Commission at regularly scheduled meetings.

The Commission's goal is the preservation of our heritage and conservation of our natural resources through informed decision making; Committee meetings are vital in developing recommendations to help the Commission achieve 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

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.** ***The Commission no longer accepts written comments or requests for regulations changes via facsimile; please submit written comments or requests for regulations changes by email, mail service or in person.***

Written comments received at the Commission office by 5:00 p.m. on October 22, will be made available to the Committee prior to the meeting. Written comments received between 5:00 p.m. on October 22 and 12 noon on October 30 will be made available to the Committee at the meeting. After 12 noon on October 30, 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 a noticed item, please provide your comments during Commission business meetings or 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 or standard mail. At the discretion of the Committee, staff may be requested to follow up on the subject you raise.

VISUAL PRESENTATIONS/MATERIALS

All electronic presentations must be submitted by the written materials deadline of October 30 at 12 noon and approved by the Commission executive director before the meeting.

1. Electronic presentations must be provided by email or delivered to the Commission on a USB flash drive by the deadline.
2. All electronic formats must be Windows PC compatible.
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.

STAFF SUMMARY FOR NOVEMBER 4, 2015

3. PUBLIC FORUM

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

Receipt of public comments for items not on the agenda.

Summary of Previous/Future Actions (N/A)

Background

The Committee generally receives two types of correspondence or comment: Requests for the Committee to consider new topics, and informational items. As a general rule, requests for regulation change need to be redirected to the Commission, although at the discretion of the Committee staff may be requested to follow up on items of potential interest to the Committee and possible recommendation to the Commission.

Significant Public Comments

Ventura Port District Board of Commissioners member Everard Ashworth will attend to introduce a new partnership called the Ventura Shellfish Enterprise, which seeks to establish a series of shellfish aquaculture leases in state waters of the Santa Barbara Channel adjacent to Ventura. Commissioner Ashworth will give a brief overview of the project's planning phase, which has been funded through NOAA Sea Grant.

Recommendation (N/A)

Exhibits (N/A)

Committee Direction (N/A)

4. AGENCY UPDATES

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

Receive updates from other government agencies on marine items.

Summary of Previous/Future Actions (N/A)

Background

This is a standing item for DFW, the Ocean Protection Council (OPC), and other government agencies to provide an update on marine-related items of interest.

A. OPC: An OPC staff member (TBD) will attend and provide an update.

B. DFW Marine Region: Dr. Craig Shuman, Regional Manager, will provide an update. This update will include efforts of the Dungeness Crab Fishing Gear Working Group, organized jointly by OPC, DFW and NMFS, to explore ways to reduce risk of whale entanglement in the commercial fishery (see www.opc.ca.gov/2015/08/public-meeting-to-discuss-whale-entanglements-off-california/ for more information).

C. DFW Law Enforcement Division: Bob Puccinelli, Assistant Chief, will provide an enforcement update.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits (N/A)

Committee Direction (N/A)

5. ABALONE FMP

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

Receive update from DFW on red abalone fishery management plan (FMP) development process and timeline.

Summary of Previous/Future Actions

- FGC/MRC discuss DFW options to review abalone management Apr 2013 - Aug 2014
- FGC accepts MRC recommendation to develop red abalone FMP Oct 8, 2014; Mt Shasta
- **Today receive update on FMP process** **Nov 4, 2014; Ventura**

Background

The management and recovery of abalone species in California is guided by the Abalone Recovery and Management Plan (ARMP), adopted by FGC in 2005. The ARMP was required by legislation in 1997, prior to enactment of the Marine Life Management Act (MLMA) that requires FMPs form the primary basis for managing the state's marine fisheries. The ARMP was recognized as an interim management plan until a long-term plan could be developed. In light of changes in the red abalone fishery, and limitations in the management responses available under the ARMP, FGC endorsed a proposal from DFW to develop an FMP for the existing northern recreational red abalone fishery, separate from recovery under the ARMP.

The endorsed process to develop the red abalone FMP was launched through a series of public workshops hosted by DFW and FGC staff in Sep and Oct 2014, followed by a month-long online angler survey commencing in Feb 2015. In Mar 2015, MRC received an update from DFW on survey participation and reviewed next steps in the FMP development process.

At this meeting, DFW will review progress to date, and provide an update on the timeline and opportunities for public and scientific input.

Significant Public Comments

1. Bill Bernard, representing the California Coalition of Diving Advocates, in support of managing abalone at a finer spatial scale to allow for more proactive and responsive management

Recommendation

Solicit public input on the results of the process to date and anticipated next steps. This topic will be a standing agenda item during FMP development.

Exhibits

1. Email from Bill Bernard, California Coalition of Diving Advocates, received Apr 7, 2015

Committee Direction (N/A)

6. MASTER PLAN FOR MARINE PROTECTED AREAS

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

Receive update from DFW on review and revision process for updating the master plan for marine protected areas (MPAs).

Summary of Previous/Future Actions

- **Today receive update on master plan for MPAs Nov 4, 2015; Ventura**
- FGC receipt of draft master plan for MPAs Dec 9-10, 2015; San Diego

Background

The Marine Life Protection Act (MLPA) calls for creating an improved network of MPAs redesigned to increase its coherence and effectiveness at protecting the State's marine life, habitats, and ecosystems (§2853(a), Fish and Game Code). To help achieve its goals, the MLPA directs DFW to prepare, and FGC to adopt, a "master plan" to guide the design, implementation, and management of a redesigned network of MPAs in California (§ 2855, Fish and Game Code).

A draft master plan for MPAs was adopted by FGC in 2008 (available at www.dfg.ca.gov/marine/mpa/masterplan.asp) as a "living document" with a focus on providing guidance for designing California's MPAs through a regional approach. The master plan played a significant policy role in providing consistent scientific and design feasibility standards and guidelines across all planning regions. The regional design and adoption phases were completed in 2012 and, now that the coastwide MPA network is in place, focus has shifted from planning to implementation and management. To reflect the new focus, DFW is revising and finalizing the master plan for FGC adoption, as the foundation for managing the MLPA program statewide (FGC §2859(b)). DFW has collaborated extensively with staff from FGC, the Ocean Protection Council, and the California Ocean Science Trust to tie together MPA management, monitoring, research and evaluation concepts and priorities across statewide and regional scales. A preliminary draft was made available by request to tribes on September 25, 2015, and FGC is scheduled to receive the draft updated master plan in December 2015. Today, DFW will provide an overview of the approach used for the updated master plan, and highlight areas that represent new policy direction for FGC consideration.

Significant Public Comments

Both fishing and environmental non-governmental organization stakeholders alike have expressed an interest in how adaptive management will be characterized in the updated master plan, both in terms of timeframe for management review cycles, and criteria that FGC will use for considering adaptive management actions.

Recommendation (N/A)

Committee Direction (N/A)

7. MARINE LIFE MANAGEMENT ACT

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

Receive DFW overview of plans and timeline to review and amend the current FGC-adopted master plan for fisheries pursuant to the Marine Life Management Act (MLMA).

Summary of Previous/Future Actions (N/A)

Background

The MLMA, enacted in 1998, directs DFW and FGC to manage state fisheries sustainably through an ecosystem-based approach (§ 7050 et seq., Fish and Game Code). To help achieve its goals, the MLMA calls for developing a master plan that specifies the process and the resources needed to prepare, adopt and implement fishery management plans for fisheries managed by the state (Master Plan; § 7073, Fish and Game Code). The Master Plan is intended to help focus management effort on the highest priority species and to describe the specific tools and approaches to be applied in achieving the goals of the MLMA.

The current Master Plan was developed by DFW with input from stakeholders and adopted by FGC in 2001 (see https://www.wildlife.ca.gov/Conservation/ Marine/Master-Plan). Since then, priorities have evolved and issues arisen that are not addressed in the Master Plan. New tools and approaches have become available that have the potential to significantly improve fisheries management. Given that the MLMA calls for the Master Plan to be periodically reviewed and amended, these new tools and approaches can be incorporated into an amended Master Plan with the potential to broaden the policy scope of the document and facilitate moving more fisheries under active management as envisioned in the MLMA. A Master Plan amendment is significant and substantial enough that DFW's Marine Region has elevated its priority to one of five objectives in its new strategic work plan (Exhibit 1).

Today, DFW will provide an overview of the background, scope, and proposed approach to amend the MLMA Master Plan, including current and proposed analyses to support the information-gathering stage (see exhibits 2-4).

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. DFW Marine Region Strategic Work Plan - Summary, dated Oct 21, 2015
2. MLMA Master Plan frequently asked questions, dated Oct 22, 2015
3. DFW Draft Proposed Approach to Amend the Marine Life Management Act Master Plan, dated Oct 22, 2015
4. DFW MLMA Master Plan proposed analyses, dated Oct 22, 2015

Committee Direction (N/A)

8. FISHING COMMUNITIES

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

Explore the developing concerns about the sustainability and vitality of California's fishing communities and ports and what, if any, role FGC has in this issue.

Summary of Previous/Future Actions

- MRC initial discussion — Mar 4, 2015; Marina
- **Today's scoping** — **Nov 4, 2015; Ventura**

Background

Eleven public ports and numerous harbors dot the coast and waterways of California. Adjacent coastal communities that are reliant on certain fisheries and the fish harvesting industry are often referred to as "fishing communities," at various scales. Fishing communities depend on a number of conditions and players to sustain their vitality.

Over the past 15-plus years, many fishing communities have been confronted by challenges associated with changes in fishing or economic opportunity. Examples of challenges include fisheries management changes (e.g., management responses to address overfishing, overcapitalization and excess capacity in fisheries; loss of fish habitat, and fishery/area closures for species listed under the Endangered Species Act or federal rebuilding plans); environmental fluctuations in diversity, abundance, and distribution in fish assemblages, including those associated with climate change; and economic challenges related to increased competition in the global marketplace, and the recent economic downturn in general. The destabilizing effect of these challenges, and fishing/coastal community vitality and resilience, is a topic of active conversation along the Pacific coast, and nationwide (see exhibits 1-4).

FGC referred this agenda topic to MRC in 2014 following a petition from three northern California fishermen for new permits to fish for a more southerly species that had shown up in unusually high numbers due to warm water conditions. The petitioners, as well as supporters from northern California fish businesses and city representatives, made their case in support of the petitions based on the economic needs of local coastal communities reliant on fishing. While the specific request could not be granted without a lengthy regulatory and stakeholder process, FGC asked MRC to explore the issue of coastal community needs and the highlighted concerns.

Originally scheduled for discussion at the March 2015 MRC meeting, time constraints only allowed for an initial and very limited discussion. Today, staff will initiate further conversation with an overview of "fishing communities," guiding principles from the MLMA, and a report on current initiatives underway in California at the federal and local levels. One of the goals today is to hear from community members themselves, who are vital to clarifying the scope of the issues relevant to California fishing communities (see exhibits 5 and 6 for some perspectives originally submitted for the March 2015 MRC meeting).

Significant Public Comments

1. Assemblyman Jim Wood has expressed concerns about the needs of northern California coastal communities (Exhibit 5)
2. The California Wetfish Producers Association (CWPA) supports discussing the big big-picture issue of sustainable harbor communities (Exhibit 6)

Recommendation

Solicit public input on the scope of issues of concern regarding California's fishing community vitality and resilience, and evaluate if there are areas where FGC can play a role. What types of views, values, and concerns do different stakeholders, including coastal fishery participants, currently hold, and what can contribute to resilient fishing communities? What is the role that fishermen and local communities can play, that FGC and its policies can play, and how can stakeholders effectively engage and represent the concerns of their communities to help create more efficient and effective management?

Exhibits

1. California Sea Grant Extension Program webpage on fishing communities (https://caseagrant.ucsd.edu/project/discover-california-commercial-fisheries/fishing-communities), accessed Feb 26, 2015
2. Ocean Protection Council webpage on preserving California's fisheries (http://www.opc.ca.gov/2010/01/preserving-californias-fisheries/), accessed Oct 28, 2015
3. Maine Sea Grant, Best Practices for Working Waterfront Preservation: Lessons Learned from the Field, Mar 2013
4. National Working Waterfront Network webpage for Trinidad Harbor case study (http://www.wateraccessus.com/case_print.cfm?ID=31), accessed Oct 28, 2015
5. Letter from Assembly Member Jim Wood, received Jan 26, 2015
6. Email from Diane Pleschner-Steele, CWPA, received Feb 12, 2015 (minus attachments)

Committee Direction

Provide guidance on next steps to consider fishing community needs.

9. KELP AND ALGAE HARVEST

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

Receive DFW update on approach to amending commercial kelp and algae harvest regulations. Provide guidance on approach and next steps.

Summary of Previous/Future Actions

- FGC approves 3-phase approach to revise kelp regulations Jun 2012
- FGC adopts Phase 1 kelp regulations Nov 2013
- **Today MRC reviews approach to next regulation phases Nov 4, 2015; Ventura**

Background

Kelp has been identified as an important biogenic habitat, and is managed through DFW's kelp management program. In June 2012, FGC and DFW agreed to a three-phase approach to revise antiquated kelp and other aquatic plant regulations over several years, to improve management and enforceability (Exhibit 1), as follows:

- Phase 1: Modernize administrative kelp bed boundaries; require kelp harvest plans; improve reporting requirements;
- Phase 2: Review and potentially revise license fees and royalty rates;
- Phase 3: Review and potentially revise regulations to address kelp harvest and management concerns.

Phase 1 was completed in 2013 and implemented in 2014; DFW was scheduled to undertake the Phase 2 rulemaking in 2015, but rescheduled it to 2016 to allow time for further staff research and analysis. Recently, DFW and FGC staff have discussed the implications of undertaking a review of fees (Phase 2) prior to determining the management structure that the fees are intended to support (Phase 3). An alternative may include a step-wise approach to fee adjustments to address the lack of current funding to support the work underway. Today provides an opportunity for the committee to review and reevaluate the approach and associated timeline to most efficiently and effectively meet the management needs for commercial kelp harvest.

Significant Public Comments

Both kelp harvesters and edible seaweed harvesters have expressed interest in participating in a review of regulations governing the take of kelp and algae.

Recommendation

Clarify the purpose of the three-phase approach endorsed by FGC in 2012, and consider how to fund ongoing and future management through a change to the fee structure and timing.

Exhibits

1. CDFW memo, dated Jun 1, 2012

Committee Direction

Consider recommendation to FGC regarding any changes to the approved three-phase approach.

10. TOPICS PREVIOUSLY BEFORE WRC

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

Receive updates on items previously discussed by MRC and provide guidance on further efforts.

Summary of Previous/Future Actions

A. Fisheries Bycatch

• FGC referred bycatch to MRC	Jun 4, 2014; Eureka
• MRC hears overview of bycatch guidance in MLMA	Aug 5, 2014; San Diego
• FGC approves MRC to form Bycatch Working Group	Dec 3, 2014; Van Nuys
• **Today receive update**	**Nov 4, 2015; Ventura**

B. Pier and Jetty Fishing

• MRC hears pier fishing issue and petition	Nov 5, 2014; Los Alamitos
• FGC directs staff to undertake pier project in S CA	Dec 3, 2014; Van Nuys
• **Today receive update**	**Nov 4, 2015; Ventura**

Background

A. Fisheries Bycatch

Staff will update MRC on a process toward initiating a staff-directed fisheries bycatch workgroup, as endorsed by FGC in Dec 2014.

At its Aug 2014 meeting, MRC had an initial discussion of bycatch in the context of California's fisheries and guidance provided in the Marine Life Management Act (MLMA) and master plan for fisheries. MRC discussed the importance of focusing on fisheries under FGC's direct authority, applying the standards set forth in the MLMA, and recommended that a bycatch workgroup be formed to jump-start a review of current guidance, available and needed data for state fisheries, and principles to consider in the master plan update. In Dec 2014, FGC accepted the MRC recommendation to form a staff-directed workgroup. Staff has compiled a list of volunteers interested in participating, and is ready to initiate the formation of the workgroup.

B. Pier and Jetty Fishing

Staff will update MRC on collaborative efforts to review pier and jetty fishing concerns and interests in Southern California, as endorsed by FGC in Dec 2014.

To date, focus has been on the Santa Monica Bay piers, where the precipitating pier fishing-hooked shark-swimmer event occurred. A "Santa Monica Bay Pier Stakeholders Summit" was held on May 7, 2015 by Heal the Bay in coordination with FGC staff, which brought together over 30 stakeholders from municipalities, the pier fishing community, state agencies, academics, environmental non-governmental organizations, sport fishing community, lifeguards, surfers, aquaria, and public safety agencies. See Exhibit B.1 for a meeting summary. While FGC progress has been

hampered by staff capacity limitations, staff is now available to focus on this effort into early 2016.

C. Other

This is a place-holder for updates or comments regarding previous agenda items not included in today's agenda.

Significant Public Comments

A1. Support for commencing the bycatch workgroup and a white paper with background information to inform the beginning stages of the workgroup (exhibits A.1 and A.2).

Recommendation (N/A)

Receive update from interested parties on efforts to date; following the meeting, staff will reach out to FGC listserv soliciting interest in participation and report back to MRC in Mar 2016.

Exhibits

A.1. Letter from Geoff Shester, Oceana, received Oct 22, 2015

A.2. Report prepared by Oceana on California fisheries bycatch issues, dated Oct 22, 2015

B.1. Summary prepared by Heal the Bay, Santa Monica Bay Pier Stakeholders Summit, dated May 7, 2015

Committee Direction (N/A)

From:	Bill Bernard
To:	FGC; Mastrup, Sonke@FGC; Ashcraft, Susan@FGC; Shuman, Craig@Wildlife; Wildlife DIRECTOR
Subject:	Abalone FMP Frame Opportunities and Goals Recommendation
Date:	Tuesday, April 07, 2015 10:36:25 PM
Attachments:	CCDA Abalone FMP Recommendation Frame Opportunities Goals Phase.pdf

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Please find the attached PDF Document:
Abalone FMP Frame Opportunities and Goals Recommendation.

Submitted on behalf of the California Coalition of Diving Advocated diving club.

Best regards,
Mr. Bill Bernard

California Coalition of Diving Advocates

Conservation-Education-Science-Policy-Stewardship

4/7/15

After a decade and more, of having been a seated recreational member representative to the Commissions AAG process, the North Central Coast Marine Life Protection Act and the Al Taucher subcommittee, it would be inaccurate to say that I have not become "constituent educated" from these experiences in many wildlife science and the management thereof that science along with the issues and policy related.

I am going to go at it backwards, if by the competition of recreational red abalone FMP process, and if the Department recommendation were to be just simply rename the two regions the abalone fishery currently operates in today, and do nothing more than just that then we will have just simply advance the self full filling prophecy to closure of the abalone fishery.

Commissioners, Mr. Director, you have taken the first steps towards ending the self full filling prophecy by choosing to remove the recreational red abalone fishery out from under the auspicious of the ARMP into the MLMA- FMP process. Don't quit on the constituents now. We need to finish what we have started, and not fail by proclaiming practically prevents us from doing what we need to do. We can do, within the currently practically of the times, what needs to be done to ensure a sustainable recreational abalone fishery that the constituency of today and tomorrow will participate in with satisfaction of enjoyment.

6.2.2.1 of the ARMP. So much of our red abalone MVP is based upon the work of Shepherd & Brown. Shepherd and Brown (1993) found that recruitment started to decline when densities fell below 3,000 ab/ha. Stock collapsed when adult densities fell below 1,000 ab/ha.
A problem is Shepherd did not assess the densities of abalone the way the Department does today. Waterloo Bay Australia 1985, Shepherd, et al sent his divers out with a newly designed caliper. Diver were assigned to quadrants within the Bay and each measured, counted abalone not in transects as the DFW does, but measured abalone and the counts of abalone to obtain size and numbers of abalone totals against the mathematics designed to measure power of detection. Speed of measurement and the number of measurements made over time equated to the power of detection. Divers measured abalone using what was known as the free roam method within a quadrant. On average it took between 2.9 to 6.2 seconds to measure an abalone. The free roam method tends to produce more abalone counts than transect methods, but has the substantial advantage of saving time underwater. The numbers of abalone found, across the sizes found can usually correlate, and are used to determine SPR ratio's at site scales.

Commissioners in your packets today you have a letter from The Nature Conservancy, authored by Jono Wilson, PhD., and its intent is timed to meet and go beyond the phase in which the abalone FMP process is at now: Frame Opportunities and Goals. The four suggestive consideration and the rationales for each of the suggestion considerations are appropriate within scoping practicalities of the times. It is our hope that you will advance all of the suggestive recommendation today to the next steps in the abalone FMP process for further consideration by the Commission and the Department.

California Coalition of Diving Advocates

Conservation-Education-Science-Policy-Stewardship

At this time, as the representative for the California Coalition of Diving Advocates diving club we advocate that uses of zones, more than two and ideally four zones be used in the development of the Recreational Red Abalone Fishery FMP process; plus the contents of Dr. Jono Wilson TNC letter be advanced forward. Within the TNC letter recommendation letter Consideration 1: for examining area-specific stock information (perhaps by established sub-region) and a more flexible and adaptive approach to adjusting (up or down) management interventions (e.g. size limits, closures) at the appropriate spatial scale would allow for more responsive and proactive management.

Mr. Bill Bernard
Representative, CCDA.

Department of Fish and Wildlife Marine Region Strategic Work Plan - Summary
Advancing Marine Resource Management in California
Updated - October 2015

Goal

Align statewide interests in marine resource management and fully utilize current technology, best available science, and best management practices to advance marine resource management in California.

Objectives

- Develop and implement electronic data collection and reporting structure relevant to management
- Amend Marine Life Management Act (MLMA) Master Plan to guide implementation of MLMA and increase scope of active management
- Determine appropriate structural organization and capacity to facilitate proactive management
- Identify and fill existing management gaps
- Evaluate and implement sustainable funding structure

Needs

- Joint work plan to achieve objectives
- Discipline exercised by all parties to focus short-term efforts on the Strategic Work Plan and critical resource management needs
- Leverage external support opportunities

Timeline

- Initial focus on electronic data collection and MLMA Master Plan amendment through mid - 2018

Metrics for success

- Implementation of electronic reporting of updated data streams
- Recognized achievement of management objectives mandated in the MLMA
- Sufficient and appropriate structural organization and capacity for effective management

Master Plan for Fisheries Amendment

Top Ten Frequently Asked Questions

1. **What is the Master Plan for Fisheries?**
   The Marine Life Management Act (MLMA) is a California law, passed in 1999, that directs the Department of Fish and Wildlife (Department) and the Fish and Game Commission (Commission) to manage state fisheries sustainably through an ecosystem-based approach. To help achieve the MLMA's goals, the Act calls for the development of a strategic plan known as the Master Plan for Fisheries. The Master Plan is intended to help focus management effort on the highest priority species and to describe the specific tools and approaches to be applied in achieving the goals of the MLMA. The Master Plan is a document that is developed by the Department with input from stakeholders and adopted by the Commission.

2. **Why is the Master Plan for Fisheries being amended now?**
   The current Master Plan was adopted fifteen years ago. Since then, priorities have evolved and issues arisen that are not addressed in the existing Master Plan. New tools and approaches have become available that can significantly improve fisheries management that can be incorporated into an amended Master Plan.

3. **Who is leading the amendment effort?**
   The Department of Fish and Wildlife Marine Region will be directing the effort. The Department may oversee contractors assigned to specific tasks such as meeting facilitation, editing, conducting analyses, process management, and logistics.

4. **What are the benefits of amending the Master Plan?**
   When the Master Plan was originally adopted, it included a list of species that were priorities for Fishery Management Plan (FMP) development. However, in the last 14 years, those priorities have changed considerably. An amendment will help the Department and stakeholders develop shared expectations of what successful implementation of the MLMA looks like. It will also serve to focus attention on fisheries that would most benefit from additional focus to achieve or maintain sustainability. In addition, a range of new fisheries management tools and approaches have been developed over the last decade that can better assess the status of stocks and ensure that management measures are tuned to the needs of fish populations and the fishing communities that depend on them. Successful implementation of these tools through an amended Master Plan can reduce risk and potentially result in greater fishing opportunity, improved access to the growing number of sustainability conscious markets, increased revenue, and greater adaptability to changing climate and oceanic conditions.

5. **What is the timeframe for updating the Master Plan?**
   2015 - The Department and the Commission will define the Master Plan development process, identify information and resources needed, work to secure funding, and compile background information.

   2016 - The Department will conduct or oversee supporting analyses, and engage in initial outreach to stakeholders.

   2017 - Issue-based workshops will be held. The Master Plan is drafted, revised in response to tribal, peer review and stakeholder comments.

   2018 - The Master Plan is anticipated to be adopted in early 2018.

6. **How will stakeholders be affected?**
   The Master Plan revision will not change fishing regulations directly. Rather, it will establish priorities, policies, and approaches that will guide management in the future, making management more consistent and predictable. These policies include identifying fisheries that will most benefit from FMPs, identifying tools for assessing fish stocks and managing harvest, understanding when and how to consider socioeconomic impacts, how to integrate the new MPA network into management, and how best to engage stakeholders and build partnerships.

7. **What opportunities are there for public input?**
   The MLMA places significant emphasis on the role that stakeholders and outside experts should play in Master Plan development. Accordingly, the Department anticipates a range of opportunities for public engagement during 2016 and 2017, including town hall meetings, issue-based workshops, web surveys, meetings of the Commission and its Marine Resources Committee, and designated document review periods.

8. **How are outside groups and funding involved?**
   Partnerships are highlighted by the MLMA as an important means of leveraging outside resources to expand the Department's capacity and improve management. For example, the Department may choose to engage in partnerships with outside groups such as fishing associations or environmental groups to develop background materials, or use funds from the Ocean Protection Council or the philanthropic community to help pay for facilitation or supporting analyses. The Department and the Commission are committed to maintaining the integrity and transparency of the process and all partnerships will be structured to achieve that goal.

9. **Does the review have any relationship to the MLPA Initiative?**
   No. This is a separate effort under a different law. The Marine Life Protection Act (MLPA) Initiative was focused on creating an improved network of areas where fishing is prohibited or restricted for the purpose of ecosystem protection. By contrast, the MLMA and its implementation plan, the Master Plan for Fisheries, are focused on the compatible goals of improving fisheries management and on how to achieve sustainable and economically viable fisheries in the State. Nevertheless, the Master Plan review will be an opportunity to help identify how the new MPA network should be considered when managing fisheries.

10. **How does this affect other Department priorities?**
    Several major strategic initiatives are moving forward at the same time as the Master Plan review, including the development of FMPs for the recreational red abalone and commercial herring fisheries, the transition to electronic reporting, addressing whale entanglement, and ongoing management of state and federally managed fisheries, among others. The Master Plan amendment is a major undertaking that will shape how the Department manages fisheries over the next five to ten years. As a result, some other activities will likely be deferred until it is completed. An amended Master Plan for Fisheries will make state management of fisheries more efficient, transparent, and predictable.

DRAFT

Proposed Approach to Amend the Marine Life Management Act Master Plan

Vision:
In 1998, California adopted one of the nation's most progressive marine management laws, the Marine Life Management Act (MLMA). In 2012, the state completed a science-based statewide network of marine protected areas (MPAs) under the Marine Life Protection Act (MLPA). Effective implementation of these two laws can distinguish California as one of the best managed marine environments in the world.

In the 15 years since its adoption, the MLMA has been an effective guide for certain fisheries. However, the law has not been fully implemented due to competing demands and insufficient funding. At the same time, the past 15 years have yielded valuable lessons regarding implementation and significant advancements have been made in the field of fisheries management and science, offering more efficient ways to implement the MLMA. The MLMA itself remains an effective framework. However, the current Master Plan for Fisheries, which the MLMA requires as a guide to implementation, does not reflect recent innovations in fisheries management and science. By revising the Master Plan to incorporate these innovations and best practices, implementation of the MLMA can be revitalized to achieve its vision of thriving fisheries, healthy ecosystems, and transparent and strategic management.

Goals:
Revise the Master Plan for Fisheries so that it enhances sustainability of the state's ocean fisheries, increases management effectiveness and efficiency, sets clear expectations, and fosters transparency and flexibility.

Objectives:
These goals will be pursued through the following objectives:

1. Establish priorities for management efforts (what should be done?) (Fish & Game Code 7073(b) (2))

The MLMA requires the Master Plan to prioritize fisheries for management. The existing Master Plan's priority fisheries list should be revised to reflect new approaches and information. Updating the list would address the California Department of Fish and Wildlife's (DFW) and the Fish and Game Commission's (FGC) strong desire to develop a broadly accepted set of priorities to guide strategic investment of time and resources. Updating the priority list would also serve the interests of fishermen, scientists, conservation and other organizations, and the interested philanthropic community.

2. Develop strategies for implementing MLMA-based active management (what form should those efforts take?) (Fish & Game Code 7072, 7074, 7080)

The current Master Plan's guidance on the contents of Fishery Management Plans (FMPs), as well as information requirements and processes for developing them, presents a single, data-intensive model for management under the MLMA. This model reflects the state of practice in the late 1990s and should be updated to incorporate newer, less onerous, and less data-

intensive approaches. Reinterpreting the MLMA provisions for active management under a revised Master Plan should demonstrate opportunities to more efficiently implement the MLMA by scaling the planning approach for each fishery to the available data and the size of the fishery.

3. Develop strategies for enhanced management: (what new tools/approaches can be used?) (Fish & Game Code 7073(b) (3))

Stock Assessments — Active management of fisheries under MLMA has been constrained by an expectation that sound management should strive to reduce uncertainty through the application of integrated stock assessments, where all available information is simultaneously analyzed with models that find the best fit, including biological reference points related to sustainability. It is now possible to develop less costly assessments of such fisheries that are of sufficient quality to inform management and guide data collection, or to form the basis of harvest control rules. Additional capacity could be accessed by taking advantage of California's rich set of research institutions, universities, agencies, funding sources, and broad interest in advancing fisheries science and management. The Master Plan could help encourage these partnerships and endorse creative approaches to generating and funding stock assessments.

Harvest Control Rules — A core element of effective fisheries management is a harvest control rule that can adjust fishing mortality to reflect the changing status of a given population. Most California fisheries operate without such formal rules. National and international innovations have produced tools for structuring harvest control rules in a more straightforward fashion than was previously done. However, in order for such elements to become common features of harvest control rules, appropriate guidance needs to be incorporated into the Master Plan.

Ecosystem Considerations — A distinctive feature of the MLMA is the explicit inclusion of ecosystems in the definition of sustainability. However, it has proven difficult to explicitly incorporate ecosystem considerations into management of state fisheries, partly because the existing Master Plan provides only very broad guidance in this challenging area. In the last decade, significant advances have been made in considering the ecosystem impacts of fisheries in important, if still incomplete ways. Adaptation and application of these approaches would provide a systematic practical way to meet the standards of MLMA regarding ecosystem conservation.

Using MPAs to help advance MLMA goals — The recent completion of the statewide marine protected area (MPA) network creates an opportunity to better understand, integrate, and account for MPAs in achieving the fisheries and ecosystem protection goals of the MLMA. Specifically, MPAs can influence harvest control rule approaches since a known percentage of biomass may be protected inside MPAs. They may also influence effort capacity targets, provide opportunities for collecting essential fishery information or estimating stock status, and can impact decisions regarding appropriate levels of risk. MPAs can also create unique management opportunities, protect habitat, and can have bearing on the economic considerations that go into fisheries management. These issues intersect with many areas of MLMA concern, and clearly articulating in the Master Plan what MPA integration can mean would be valuable step.

Bycatch — MLMA explicitly requires that fisheries bycatch be evaluated and reduced as appropriate. However, a lack of policy guidance and relevant information regarding bycatch in specific fisheries has created a degree of uncertainty with respect to the preparation of new FMPs. As with other aspects of managing data-poor fisheries, it may be possible to develop a protocol that can guide a systematic effort to develop and evaluate information on bycatch in a fishery while setting management measures that properly reflect risk and uncertainty.

Improving data collection and use —The transition to an electronic-based data collection program will help establish a foundation of information upon which a wide range of management strategies and responses can be based. Improving the timeliness of data availability and ensuring that what is collected is used to guide and enhance management is a critical strategy.

Economic Considerations — Economic analysis has the potential to provide valuable information for assessing the viability of management options. However, determining the economic status and trends in a fishery, and the potential impacts of management measures, remains a great challenge for a variety of reasons, including a lack of critical data (e.g., the costs of fishing), limited DFW staff capacity, and diverse analytical approaches, as well as limited understanding on the part of decision makers and stakeholders of the methods and limitations of economic analysis. Articulating the methods and roles of economic analysis in management decisions so that stakeholders and decision makers share a common understanding could provide a stronger basis for evaluating options, incentives and disincentives, and other economic factors than now exists.

Community Considerations — MLMA calls for consideration of community impacts of fishery management measures, and such impacts can be a focus of great stakeholder interest. However, DFW and FGC lack a settled approach to considering community impacts. Nonetheless, a range of tools are available for evaluating the community impacts of management decisions. Describing options for conducting community impact analysis of fishery management measures can help ensure that these impacts are considered in a consistent fashion reflecting best practices and that expectation are realistic.

4. Identify strategies for enhanced stakeholder engagement in fisheries management (who should be engaged and how?) (Fish & Game Code 7073(b) (4))

Stakeholder Involvement — The MLMA establishes a prominent role for stakeholder participation in the development of FMPs and other management measures. While the existing Master Plan includes guidance on stakeholder involvement, agency staff, decision makers, and stakeholders express dissatisfaction with current approaches. The increasing use of social media and other innovations, including by Federal fishery management councils, provide the opportunity to create a toolbox of methods for involving stakeholders in more efficient, flexible, and informative ways. Guidance on the circumstances under which different tools work best would enable planning for regulatory and other processes large and small.

Collaborative Management — The MLMA explicitly encourages DFW and FGC to manage fisheries in collaboration with fishermen and other stakeholders. However, neither the Act nor the Master Plan provide guidance that operationalizes this direction. This lack of a framework has frustrated some efforts to develop collaborative management arrangements even when partner organizations express an interest in doing so. Extensive experience with collaborative management, primarily outside California, can be drawn upon to create a framework that DFW, FGC, and stakeholders can use for identifying, evaluating, and structuring collaborative

management activities in a way that increases capacity for effective fisheries management, respects the prerogatives of DFW and FGC, complies with state law, and inspires fishermen and other stakeholders to assume greater accountability for effective management.

5. Identify strategies for making the Master Plan an adaptive and living document, improving efficiencies, and engaging the scientific community (how to ensure usability and adaptability over time?) (Fish & Game Code 7073(b) (4)

Updates to the Master Plan are process-intensive and the next revision should address the need to make the Master Plan more relevant to the regular work of DFW and the FGC. For example, the Master Plan could set out a suite of higher level goals, or it could describe the development of objectives aimed at achieving those goals. DFW's development of these annual objectives could be comparatively agile and process-free, and would help ensure the Master Plan's relevance over time, both to the Department and to stakeholders looking to collaborate with DFW efforts. A web-based portal may help serve to engage the scientific and stakeholder community and be a means for keeping the plan and implementing products relevant and useful over time.

6. Identification of resource needs (what's needed to accomplish?) (Fish & Game Code 7073(b)(3)

It is essential that the plan realistically identify the resources needed for its implementation, otherwise the new tools and approaches described will be unable to be brought to bear.

Proposed Approach and Timeline:

The amendment to the Master Plan is proposed to be separated into two distinct phases. The first phase will be focused on information gathering and is expected to take place through the end of 2016. The projects and analyses that will be undertaken as part of the information gathering stage are described in the document entitled "Ongoing and Proposed Analyses Supporting the Development and Implementation of an Amended Master Plan for Fisheries."

The second phase will be focused on the amendment to the Master Plan for Fisheries. This phase will include tribal consultations, scoping sessions, informational and content specific workshops, public input and peer review. It is anticipated this phase will be initiated in late 2016 and conclude in early 2018 with the possible adoption of the amended Master Plan by the Fish and Game Commission.

DRAFT

Ongoing and Proposed Analyses Supporting the Development and Implementation of an Amended

Master Plan for Fisheries

MLMA CONSISTENCY ASSESSMENT

MLMA-based Assessment Framework (Center for Ocean Solutions)

A Marine Life Management Act (MLMA)-based assessment framework is under development that is expected to evaluate the degree to which the management of an individual fishery is consistent with the directives of the MLMA. The effort draws from a number of sustainability assessment frameworks from around the world and distills, refines, and translates the most appropriate performance metrics into a non-technical approach for CDFW to use in tracking and enhancing performance under the MLMA. The expected end product will be a web-based tool to help assess consistency with the Act, identify gaps, and inform management priorities

STOCK ASSESSMENT, RISK MANAGEMENT and SUSTAINABILITY

California Fisheries Tool-kit (Natural Resources Defense Council/University of British Columbia)

This tool-kit now under development can help provide stock assessments, research protocols, and potential management strategies for individual fisheries. Led by the Natural Resources Defense Council (NRDC)/University of British Columbia and California Department of Fish and Wildlife (CDFW), this project will develop a structured framework for improving stock assessment and harvest control rules for California state fisheries. At the heart of the project is the design and implementation of a customized California Fisheries Toolkit that will include the life histories of state-managed species, the characteristics of the state's fishing fleets, and assessment outputs and harvest control rules that are compatible with the requirements of the MLMA. Once developed, it is anticipated that the Toolkit will enable CDFW to identify and apply optimal stock assessment methods and harvest control rules and to design data collection plans for fisheries under state management.

ECOSYSTEM CONSIDERATIONS

Readying California's Fisheries for Climate Change (California Ocean Science Trust)

The purpose of this project is to develop recommendations and considerations to inform a chapter in the Master Plan that will provide a framework and approach to guide sustainable fisheries management in the face of a changing climate. CDFW has sought the scientific and integration support of the Ocean Protection Council-Science Advisory Team (OPC-SAT) to co-produce recommendations for a chapter of the amended Master Plan. Facilitated by the OST, the OPC-SAT (including relevant external experts) proposes to work collaboratively with DFW

and FGC staff to develop an approach by which climate change can be considered in sustainable management of California fisheries. The approach will bring the best scientific thinking to bear on this topic and develop a set of recommendations of science guidance that can inform fisheries policy. The intended outcome of this work is a scientifically robust peer reviewed framework and approach to guide sustainable fisheries management in the face of a changing climate that can be integrated into the amended Master Plan.

FISHERY PRIORITIZATION

Risk Assessment and Ecosystem Considerations (Ocean Science Trust)

The project will consist of three components: 1) a Productivity and Susceptibility Analysis (PSA) to 30 of California's primary commercial and recreational species, 2) the development of a decision making framework that comprehensively evaluates the ecological, social, and economic threats associated with each fishery and prioritizes the management actions that will provide the most value to the state, and 3) testing that framework on a suite of five fisheries to understand its applicability statewide. The outcome will be a risk-based prioritization framework that is specific to California's management objectives as outlined in the MLMA. This framework is anticipated to assist the state in the prioritization of fisheries for Fishery Management Plan (FMP) development. It will also provide guidance on how the state should invest in future data collection and monitoring activities, and provide a critical link between the management of individual fishing activities and the comprehensive planning needed to meet ecosystem-based fishery management mandates.

BROADER APPLICATION of the MLMA

Status of Fisheries Dashboard (TBD)

Application of the MLMA has historically been focused on a relatively few fisheries for which FMPs have been developed. However, a new approach to another requirement under the MLMA, status of fisheries reports, could help broaden its application to other species. Development and regular updates of web-based status reports could form a "California Fishery Dashboard" that provides a comprehensive picture of fisheries management in California, increases transparency, and focuses management and research. A consistent structure to the reports that's focused on the goals of the MLMA would help identify where management is consistent with the Act and where gaps remain. The status report would also serve to focus FMP development efforts in a cost-effective way on the specific gaps and issues needing attention.

Scaled Fishery Management Plans (TBD)

If a FMP is needed, its scale should reflect the size of the fishery and complexity of the issues it presents. For example, fisheries with both commercial and recreational sectors, multiple gear types, broad geographic distribution, significant resource concerns, and allocation issues, may require more intensive public processes, more complex documents, and more funding to

develop. Comparatively simpler fisheries may need considerably less process and resources. The development of a framework to help scale FMP development efforts will further help ensure that any fisheries that move from a status report to a FMP, do so in a cost-effective and tailored way.

ESSENTIAL FISHERY INFORMATION and DATA NEEDS

Data Review (MRAG Americas)

CDFW is undertaking a review of its marine fisheries information collection and management programs. The review will comprise five analytical components:

- Describe existing CDFW programs for gathering and managing state marine fisheries-dependent management information,
- Inventory the CDFW marine fisheries-independent information assets,
- Identify current and anticipated fisheries management information needs,
- Describe current constraints and potential solutions for improving information gathering programs, and
- Identify potential strategies, partners, and estimated costs for improvement projects.

This work is expected to result in explicit recommendations for data collection improvement over the short, medium, and long term, along with estimates of associated costs. The resulting work should identify data collection needs to meet legal requirements, policy considerations, and goals. It should also develop recommendations to address data needs that leverage aspects of the existing monitoring programs, and consider trade-offs between costs and coverage levels, timeframes for implementation, and possible providers of potential solutions.

SOCIOECONOMICS and FISHING COMMUNITIES

Socioeconomic Profile (TBD)

A California socio-economic profile will be undertaken to provide information on the economics of each primary fishery, port, and region to help understand the history and dynamics of a fishery and how management may affect community and socioeconomic goals. In addition to providing a current view, the profile will also identify strategies and recommendations for tracking key metrics over time.

Understanding the potential economic and community impacts of regulation as well as trends in effort and landings can help prioritize and guide management so that it minimizes unintended socioeconomic impacts. The proposed project will analyze patterns of participation by fishermen in state-managed fisheries, using appropriately masked agency data on permit holders, landings, ex-vessel revenues, and other dimensions. The resulting analyses may inform reports on the status of state-managed fisheries, required under the MLMA, as well as a possible review of the Fish and Game Commission's restricted access policy.

COLLABORATIVE MANAGEMENT and STAKEHOLDER ENGAGEMENT

Partnerships (The Nature Conservancy)

The Nature Conservancy is developing a draft Partnerships Report that outlines a role for fishery stakeholders to assist CDFW in achieving progressive and adaptive fishery management strategies. The document will seek to provide a general definition of fishery partnerships, what makes them successful, and how different models of fishery partnerships could apply to California fisheries management. It will also describe the policy setting and the opportunities for partnerships identified within the MLMA.

The document will be organized around the primary tasks related to fisheries management including: prioritization of management efforts, fishery specific planning, research and monitoring, assessment, decision rules, and compliance and enforcement. For each management task, the report will provide an overview, a description of the current status and limitations, potential opportunities for partnership-based solutions and an evaluation of the organizational capacity and durability that partner organizations must possess in order to effectively partner with CDFW. The report will also provide case study examples and lessons learned from existing partnerships in California. TNC will be working with CDFW to help ensure the report reflects the goals, interests, and limitations of the Department and will be a useful source of information for the Master Plan review.

Stakeholder Engagement Toolkit (Center for Ocean Solutions; Kearns & West)

This project will provide guidance for fisheries managers on how to efficiently and effectively engage with stakeholders. The Center for Ocean Solutions (COS) and Kearns & West are developing a stakeholder engagement toolbox that will help match management goals to specific outreach and engagement strategies that ensure targeted and meaningful stakeholder involvement in the decision making process. Stakeholders and experts will have an opportunity to shape the how the considerations and recommendations identified are incorporated into the Master Plan itself.

Discover California Commercial Fisheries

- Fishing Communities
- Fisheries Seasonality
- Statewide Commercial Fishery Activity
- Measuring Commercial Fishery Activity
- The Ocean Environment
- Management Context
- Regions
- Regional Seafood Posters

Safe & Sustainable Seafood Supply

- Aquaculture Resources
- California Seafood Council
- Collaborative Trap Fishing Research
- Discover California Commercial Fisheries
- Healthy Ocean, Healthy City
- Improving Yields of Farmed Pacific Oysters
- Managing Data-Poor Fisheries
- Safe Oysters
- Safe Seafood
- Seafood NIC
- Seafood Training

Fishing Communities

Fishing communities are an important part of California's maritime heritage and economy and its coastal and ocean ecosystems. Viable commercial fisheries require not only healthy marine resources and habitat, but also people and businesses to support fishing activities. Those activities, in turn, support local economies and provide seafood to consumers.

According to the Federal Magnuson-Stevens Fishery Conservation and Management Act, a fishing community is defined as

> ... substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community.

However, a fishing community depends on these players and more to thrive and to get the catch to consumers. For example, harbors provide hoists, docks, boat slips and other amenities that are critical for offloading the catch, and provide "safe harbor," protecting boats and people from potentially severe weather and ocean conditions. Likewise, marine supply, electronics, boat maintenance, and other businesses are essential for keeping fishing boats operating safely and effectively. Together, fishing operations, these support businesses, and the people who run them, are dependent on one another for their livelihood and well-being. As communities, they are connected to each other socially and economically, both locally and across regions.

And although the definition above focuses on communities as geographic places, fishing

communities also may be defined by shared occupation or interest. Examples include the West Coast groundfish trawl fishing community and the southern California sea urchin and sea cucumber dive community.

Information Sources

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Pacific Fishery Management Council (PFMC): Habitat and Communities: Fishing Communities

Pacific States Marine Fisheries Commission (PSMFC) Pacific Fisheries Information Network (PacFIN) and Fisheries Economics Data Program (EFIN)

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State of California
Ocean Protection Council

Preserving California's Fisheries

The waters off California's coastline boast some of the most productive fisheries in the world and as a result, the state is defined by its rich fishing heritage. The OPC is committed to preserving and restoring California's valuable fisheries and the communities and people that depend on them.

California's fisheries are faced with many threats including pollution, habitat destruction, overfishing, and climate change. Each of these challenges can contribute to declines in fish numbers and changes in distribution that in turn threaten fisheries and associated businesses. Pursing innovative policies and projects to help restore and promote our fisheries is a top priority for the OPC. The OPC views its mandate as an opportunity to address the underlying problems facing California's fisheries, not just the symptoms.

The OPC is working to improve fisheries management throughout California by pursuing innovative community-based or cooperative management and supporting further implementation of the Marine Life Management Act (MLMA). The Marine Life Management Act Lessons Learned Project (http://www.opc.ca.gov/2009/04/mlma-lessons-learned-project/) is now a complete report which was led by a six-member team to evaluate the successes and challenges of the implementation of the MLMA. The evaluation provides recommendations to assist future MLMA efforts by the California Department of Fish and Game (DFG) and California Fish and Game Commission (Commission). The Collaborative Fisheries Research (CFR) Organization will be a venue for commercial and recreational fishermen, academic scientists, coastal managers, tribes, non-governmental organizations, and funders to discuss and prioritize existing and emerging fisheries management data needs. Once established, the CFR Organization will also provide grant funding to support collaborative research projects that address these needs.

A primary focus of the OPC is to provide grant funding that directly supports fishermen, communities, and businesses that are willing to investigate and pursue new management approaches. In 2009, the OPC released the California Fisheries Challenge, a competitive grant program that offers fishermen and communities in the state an opportunity to submit proposals that will improve and sustain long-term fishery health and sustainability. The California Fisheries Fund (http://www.opc.ca.gov/2010/01/california-fisheries-fund/) is another innovative undertaking that offers loans to California fishing communities, groups, associations, and businesses to assist in transitioning to more environmentally and economically sustainable fishing practices and governance. This is particularly important when conventional investment capital or loans from traditional financial institutions may not be available. The first loans and lines of credit from the California Fisheries Fund were distributed to a fisherman, a dockside fish buyer, and a distribution company from the Central Coast in 2009.

Much of the OPC's fishery work is also aimed at partnering with DFG to more fully achieve its mandate. In 2006, the OPC and DFG developed the Joint Workplan, which included a wide variety of projects funded through an $8 million appropriation. These projects focus on collecting and analyzing essential data to apply to the decision-making process and improving DFG vessels and equipment. The data collected pertains to

marine ecology, essential habitats, species interactions, natural processes that affect fish populations, survey techniques, and data report methods.

The OPC tackles important fisheries issues by working with a wide range of stakeholders including commercial and recreation fishermen, state and federal fisheries managers (California Department of Fish and Game (http://www.dfg.ca.gov/), the California Fish and Game Commission (http://www.fgc.ca.gov/), and National Oceanic and Atmospheric Administration (http://www.noaa.gov/)), NGOs, academia, tribes, and others.

Related Projects

- California's North Coast Fishing Communities: Historical Perspective and Recent Trends (http://www.opc.ca.gov/webmaster/ftp/pdf/docs/CA_NCoastFCP.pdf)
- San Francisco Fishermen's Wharf Sustainable Seafood Market (http://www.opc.ca.gov/2010/12/san-francisco-fishermens-wharf-seafood-market/) – 2010 Pilot Season
- Collaborative Fisheries Research Organization (http://www.opc.ca.gov/2010/08/collaborative-fisheries-research-organization/)
- California Sustainable Seafood Initiative (http://www.opc.ca.gov/2010/03/california-sustainable-seafood-initative/)
- Central Coast Groundfish Project (http://www.opc.ca.gov/2010/05/central-coast-groundfish-project/)
- Dungeness Crab Task Force (http://www.opc.ca.gov/2009/04/dungeness-crab-task-force/)
- California Fisheries Fund (http://www.opc.ca.gov/2010/01/california-fisheries-fund/)
- San Luis Obispo Sustainable Fisheries Support (http://www.opc.ca.gov/2010/10/san-luis-obispo-sustainable-fisheries-support/)
- Moss Landing Sustainable Fishing Feasibility Study (http://www.opc.ca.gov/2010/12/moss-landing-fisheries-market-project/)
- San Diego Sea Urchin Fishery Project (http://www.opc.ca.gov/2010/08/san-diego-sea-urchin-fishery-project/)

Quick Links

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BEST PRACTICES FOR WORKING WATERFRONT PRESERVATION: LESSONS LEARNED FROM THE FIELD

MAINE SEA GRANT

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I. Overview

The *Sustainable Working Waterfronts Toolkit* seeks to engage and educate working waterfront stakeholders by helping to draw connections between abstract tools and concrete on-the-ground examples of successful implementation. The Tools in Action Work Group compiled a collection of 19 case studies of communities and states from around the country that demonstrate the implementation of a variety of tools for sustaining working waterfronts. Providing models of how tools have been used previously can be extremely helpful, especially as successful initiatives often utilize multiple tools.

II. Toolkit Case Studies by Region

A. Northeast

1. Gloucester, Massachusetts (Gloucester, MA)

2. Outreach and Education as Tools to Address Working Waterfront Issues in Maine (Outreach and Education in Maine)

3. Portland, Maine: Balancing Maritime Uses and Waterfront Diversification Through Municipal Zoning (Portland, ME)

B. Mid-Atlantic

4. Enabling Legislation in Virginia Establishes The Middle Peninsula Chesapeake Bay Public Access Authority (Public Access Authority)

5. York River/Gloucester County, VA: Balancing Conflicting Uses Through Stakeholder Engagement (York River, VA)

C. Southeast

6. Collaborative Efforts to Retain Port Salerno's Diverse Maritime Heritage (Port Salerno, FL)

7. High and Dry Boats & Residents in Ponce Inlet: A Waterfront Property Owner Goes to Court to Enforce Florida's Growth Management Act and Invalidate a Municipal Referendum Prohibiting a Dry Stack (Ponce Inlet, FL)

8. Mayport Village Case Study: Using Litigation to Protect a Historic Florida Fishing Village from a Proposed Cruise Ship Terminal (Mayport Village)

9. North Carolina Water Access Study Committee Yields Major Results in Water Access Protection (NC Water Access Study)

10. Port of the Miami River Water Dependent Land Use Litigation Case Study (Port of Miami River)

D. Gulf of Mexico

11. Alabama Waterfront Access Study Committee Launches Waterfront Protection Effort (AL Waterfront Access Study).

12. Stan Mayfield Working Waterfronts Florida Forever Grant Program (Working Waterfronts Florida Forever Grant Program)

13. Waterfronts Florida Program (Waterfronts Florida)

E. Great Lakes

14. A Community-Led Endeavor to Preserve Historic Fishtown (Fishtown)

15. Transforming Marquette, Michigan's Waterfront with Form-Based Code (Marquette, MI)

F. Pacific

16. Balancing Fishing, Tourism, and Research in Newport, Oregon (Newport, OR)

17. Evolution of a working waterfront: A case study of Tacoma, Washington's Thea Foss Waterway (Thea Foss Waterway)

18. Gig Harbor's Historic Working Waterfront (Gig Harbor, WA)

19. Planning for Both Environmental Protection and Economic Development in Trinidad Harbor, California (Trinidad Harbor, CA)

The following is a brief synthesis of common themes that emerged during development of the case studies. These themes were collected into a set of "best practices" that refer specifically to the 19 case studies. Practices have been sorted by tool category, which are represented by the bold, italicized headings. Additional information about these categories is available in Section V of the Final Report. Within each category, key themes are followed by a bulleted list of best practices identified by the Work Group and the title of the case study content that informed its selection as a best practice.

III. Community Engagement

A. *Build partnerships across sectors to strengthen the links between thriving working waterfronts and thriving communities.*

- The importance of building a coalition. (Gig Harbor, WA)
- Generate public support. (Gig Harbor, WA)
- Start the process by increasing the understanding of issues working waterfront communities face. (Outreach and Education in Maine)
- Build national partnerships. (Outreach and Education in Maine)
- Partner across sectors: build community consensus and link working waterfront issues to the environment, the economy, and equity. (Trinidad Harbor, CA)
- Develop partnerships among diverse interests. (Thea Foss Waterway)
- Sustain the vision: The persistence of a vision is contingent on the persistence of participation, mobilization, and resources. (Thea Foss Waterway)
- Develop a community vision plan for the waterfront. (Port Salerno, FL)
- Engage the community: Pier owners and the fishing community were involved in establishing baseline information on current pier and building uses and vacancies. This involvement made the information credible and helped build buy-in for the process. (Portland, ME)
- Engage stakeholders and help them understand others' perspectives and interests. (York River, VA)
- Build a broad base of support. (Trinidad Harbor, CA)
- Involve stakeholders from the beginning. (Trinidad Harbor, CA)
- Clarify priorities. (Public Access Authority)
- Engage the community and gather citizens and professionals together to create an effective visioning process. (Marquette, MI)
- Engage in preliminary planning exercises to remove some biases from the development process. This allows for a conversation focused on economic development tools, Brownfield abatement credits, etc., rather than focusing solely on the appropriateness of a proposed project. (Marquette, MI)

- Stakeholder engagement helps people understand their role in working waterfronts and how changes may impact them. (AL Water Access Study)

- A community-wide visioning process created community values used to guide the city's approach to harbor development. (Gloucester, MA)

- Build capacity of both professional and community-based practitioners to address working waterfront issues. (Outreach and Education in Maine)

B. *Consider putting collaboration ahead of self-interest, toward meeting mutually beneficial goals.*

- Consider valuing collaboration over self-interest. (Trinidad Harbor, CA)

C. *Foster community leadership.*

- Encourage leadership by industry families and city leaders. (Gig Harbor, WA)

- Build the capacity of both professional and community-based practitioners to address working waterfront issues. (Outreach and Education in Maine)

- A community-driven approach and community engagement were very effective in preserving a historic commercial fishery. (Fishtown)

- A community-driven approach was an effective method to preserve historic Fishtown. Using a variety of tools to generate attention and support for waterfront protection helped the community raise adequate funds to purchase the property. (Fishtown)

- Create advisory committees: the Port Salerno Neighborhood Advisory Committee was formed. (Port Salerno, FL)

- The mayor established a nine-member Community Panel that held five listening posts around the city and distilled public comment into core community values. (Gloucester, MA)

D. *Identify the skills of your leaders and key supporters; there are "big picture" people, and there are "get it done" people.*

- Use a practical, problem-solving approach to makes the issue's relevance clear to stakeholders. (Public Access Authority)

E. Promote networking and mentoring.

- Opportunities for mentoring and networking exist and entities that can provide assistance in these processes should be identified. (Waterfronts Florida)

- Enlist the expertise of outside resources, such as state agencies. (Port Salerno, FL)

- Constant coordination and communication between government agencies has been critical to Newport's success as a working waterfront community. "Cross-pollination" between groups helped ensure continued coordination and communication. For example, City representatives attend Port meetings to open dialogue between various groups. These "strategic partnerships" initiate progress and have proven to be efficient. (Newport, OR)

F. Use a variety of approaches to engagement; not everyone can make a 7 p.m. meeting.

- Communicate accomplishments to stakeholders. (Public Access Authority)

- Convey information by establishing a web presence as well as using photography. These tools are effective in increasing awareness and building support around the preservation of working waterfronts. (Fishtown)

G. Manage the process, balancing the both big picture and small details.

- "The main method utilized by the Port Salerno community was simply getting organized." Teresa Lamar-Sarno, (Port Salerno, FL)

- The publication of best management practices and community case studies generates interest among a wider community.

- Communities that want to apply for designation as a Waterfronts Florida Partnership Community are encouraged to take part in a two-day training event. (Waterfronts Florida)

- Host a designation ceremony: The Waterfronts Florida Partnership Coordinator and other program staff visit the community following designation to promote the local Waterfronts Florida Partnership. (Waterfronts Florida)

- The location of The Waterfronts Florida Program meetings for managers rotates among designated communities. (Waterfronts Florida)

H. Take action to meet specific needs that have been identified.

I. Celebrate working waterfronts.

- Local commercial fishermen initiated an annual seafood festival to benefit the community. (Port Salerno, FL)

J. Mapping, Inventory, Study

- A legislative study can lead to concrete recommendations and public engagement. (AL Water Access Study)
- Inventories of economic and working waterfront uses are important to inform decisions. (AL Water Access Study)
- Economic and working waterfront use inventories establish a baseline allowing communities to track changes to their working waterfronts over time. (NC Water Access Study)

IV. Policy and Regulation

A. Emphasize policies that protect and encourage small-scale industrial interests within working waterfronts.

- Emphasize policies that encourage and facilitate marine-industrial-related development within recreational working waterfronts. (Ponce Inlet, FL)

B. Take advantage of regulations that are aimed at other outcomes (such as habitat protection), but have ancillary benefits for working waterfronts.

- Leveraging existing state policies and regulations. (Gig Harbor, WA)
- Habitat protection has regulatory benefits: habitat mandates facilitated the need to rebuild the pier. (Trinidad Harbor, CA)
- Settlement benefits: A comprehensive settlement proposal from responsible parties for the Superfund cleanup resulted in a timelier cleanup of the waterway and reduced litigation costs. (Tacoma, WA)
- A Community Redevelopment Area was formed and served as a financing mechanism. (Port Salerno, FL)

C. *Establish management authorities to tackle specific waterfront issues.*

- Prioritize the effort to form various types of management authorities: For example, in Tacoma, a development authority was established under the guidance of the City but was given the ability to operate independently to develop the waterway. (Tacoma, WA)

D. *Work with the state legislature to establish a state-level working waterfront revitalization technical assistance program available to coastal communities.*

- Establish a state program: A program created via state legislation provided technical assistance to coastal communities that revitalized their waterfront. (Waterfronts Florida)

E. *Consider historic preservation and charitable organization policies to promote WWF preservation.*

- Historic registry designations can effectively preserve working waterfronts. (Gig Harbor, WA)

- Local commercial fishermen organized themselves into a non-profit organization to work to protect their working waterfront. (Port Salerno, FL)

F. *Plan for policies to facilitate transition from private ownership to public property.*

- The management needs of a recognized historic property are significantly different from a shanty. The transition from a standard, open public, family-owned dock to a non-profit-owned facility required changes in policies, insurance, and additional safely precautions. To continue to allow open public access but avoid hiring security and gating off the Fishtown docks, new policies to ensure the protection of the site in perpetuity were needed. (Fishtown)

G. *Legal experts can help and may be needed.*

- Retaining an experienced land use lawyer may be beneficial. (Port of Miami River)

V. Land Conservation, Transfer, Acquisition

A. Secure community ownership and investment in waterfront can facilitate management of its use and development. (Gig Harbor, WA)

B. Establish non-profit organizations in support of working waterfronts to ensure continuity of property management for public benefit.

- Selling Fishtown's historic docks, structures and property to a non-profit organization and establishing a historic landmark increases the long-term viability of the commercial fishery and ensures the continuity of active management of the historic docks and public access. (Fishtown)

C. Look to existing state level land protection and acquisition programs for possible links to creating a targeted working waterfront land acquisition program.

- Establish working waterfront protection by creating a working waterfronts land acquisition program within the context of an existing and broader land acquisition program. (Working Waterfronts Florida Forever Grant Program)

D. Create policies to make it possible for working waterfront land to be acquired at favorable interest rates.

- Acquisition of working waterfront land in fee simple or less-than-fee simple interest. (Working Waterfronts Florida Forever Grant Program)

VI. Financing

A. Work at the local level to establish a marine investment fund in which non-marine users pay to help offset working waterfront infrastructure improvements.

- Establish or maintain a marine investment fund: non-marine users pay to help offset pier infrastructure enhancements. (Portland, ME)

B. Seek out public/private partnerships to facilitate access to a wide range of funding sources.

- Public/private partnership: Trinidad Rancheria and City partnered to access funding sources. (Trinidad Harbor, CA)

C. *Establish non-profit organizations in support of working waterfronts to improve access to funding sources and reap tax benefits.*

- Form a non-profit organization: community-led fundraising helped the community acquire and manage a historic commercial fishery (Fishtown)

D. *Use innovative approaches for cost savings (Public Access Authority)*

E. *Create new and utilize existing trade associations in support of working waterfront initiatives.*

- Creation of an informal port: the Port of Miami River created the trade association, Miami River Marine Group. (Port of Miami River)

VII. Planning

A. *Understand how working waterfront issues are intrinsically connected to other community issues (social, economic, and environmental) and plan approaches that create synergies to meet multiple goals.*

- Employ synergistic planning, for example:
  - Watershed, harbor, and economic development planning (Trinidad Harbor, CA);
  - Environmental preservation/remediation and economic development planning (Tacoma, WA);
  - Waterfront and historic preservation planning (Fishtown); and
  - Environmental protection and economic development planning (Trinidad, CA)

B. *Invest time and resources in planning to build support, clarify goals, and look to the future.*

- Invest in planning (Trinidad Harbor, CA)
- Take time to understand regional needs. (Outreach and Education in Maine)
- Preparation of planning documents such as interpretive plans, historic structures inventory and analysis, and master plan aid in ensuring long term sustainability in a historic fishery (Fishtown)

- The master planning process that the Fishtown Preservation Society implemented was helpful to generating additional community support and for showing the community how Fishtown had physically changed over the years. (Fishtown)

- Plan early. (Marquette, MI)

C. *There is likely no silver bullet, so consider a range of planning tools.*

- Create an informal port, for example, the Port of Miami River. (Port of Miami River)

- Utilizing an array of planning tools can facilitate revitalization of former industrial land into a mixed use, public-private, working waterfront. (Marquette, MI)

- Identify the tools needed to take action. If new tools are needed, create them. (Outreach and Education in Maine)

D. *Don't reinvent the wheel – profit from the lessons learned by others.*

- Models are available - adapt them to meet your needs. In addition, share your resources to benefit others. (Outreach and Education in Maine)

- Reference existing guidance documents:

    - A 67-page guidebook was developed that contains best management practices drawn from ideas and "on-the-ground know-how" of practitioners. (Waterfronts Florida)

    - A 98-page document was created that contains a set of 21 case studies highlighting the communities that received Waterfronts Florida designations. (Waterfronts Florida)

- Require applicants to provide a management plan to ensure that they have the financial resources, qualifications, and competence to manage their proposed project site in perpetuity. (Working Waterfronts Florida Forever Grant Program)

E. *It may be wise to formalize partnerships – consider developing MOUs, contracts.*

- Require a transmittal letter that binds the applicant to fulfill commitments made in their application. (Working Waterfronts Florida Forever Grant Program)

VIII. Zoning

A. *Take time to define – formalize definitions of water-dependent, water-related, and water-enhanced uses.*

- Develop common terminology. (York River, VA)

- Through the Oregon Statewide goals, the importance of water-related and water-dependent uses is clear. Newport has done everything possible to preserve the water-dependent and water-related uses along its Bayfront, aligning with the communities desire to preserve historic uses. There are many communities that have water-dependent industrial areas that became vacant over the years. It is in the city's best interest to value this real estate and ensure that the area remains a water-dependent zone. Once these areas are lost, that action can rarely, if ever can be rescinded. (Newport, OR)

B. *Know who's in charge – pay attention to jurisdictional authority.*

- Analyze jurisdictional authority (York River, VA)

C. *When developing waterfront zones, start by considering the desired outcome of single or mixed-use zoning.*

- Designate waterfront districts with maritime use guidelines. (Gig Harbor, WA)

D. *In mixed use waterfront zones, focus on creating compatibility between marine and non-marine uses.*

- The City of Newport evaluates proposals for new businesses based on a broader vision of the community's culture, rather than focusing exclusively on the financial return on an investment. Permitted uses must align with the overall vision and character of the community, and this is reflected in the well-balanced mix of uses along the Bayfront. (Newport, OR)

- Employ municipal mixed use zoning: focus on compatibility between marine and non-marine uses. Performance standards can address compatibility between marine and non-marine uses. (Portland, ME)

- Overlay Zoning District (AL Water Access Study)

- Recognize that compatibility is important when devising mix use zoning. This requires understanding the potential for compatibility between marine and non-

marine uses. Portland is addressing this issue through performance standards (Portland, ME)

IX. Taxation

A. Offer tax incentives to reward the type of development you seek.

- Offer tax incentives: The City of Tacoma offered a substantial tax deduction and exception program for new residential construction along the waterway, encouraging development and investment that helped to recover costs. (Thea Foss Waterway)

Case Study

Planning for Both Environmental Protection and Economic Development in Trinidad Harbor, California

Location
California, Humboldt County, Northern Coast, City of Trinidad

Timeframe
2006 - present

Summary
Trinidad is a small city of roughly 300 people on the northern coast of California, renowned for its spectacular scenery and natural resources. Commercial and recreational fishing have evolved as the cornerstone of the local economy. Trinidad Pier, built in 1946, has provided critical infrastructure for a once-thriving salmon fishery and private boat recreational fishing. Groundfish and salmon fishery management regulations imposed since the 1980's have resulted in substantial reductions in (nontribal) commercial and recreational fishing in the region, and contributed to social and economic impacts that have altered the fisheries landscape at Trinidad. Additionally, the bay's kelp beds have been designated an Area of Special Biological Significance and a Critical Coastal Area. These designations mandate stringent water quality standards and as such, run off from the pier meant that the pier itself was designated as a hazardous discharge. This designation essentially mandated the pier's reconstruction at a cost much higher than the industry standard. The goal of the project was to reconstruct the pier to improve both the water quality, and the social and economic vitality of the Trinidad Bay region. A combination of planning to address both environmental and economic issues jointly, broad community support, and diverse partnerships facilitated fundraising success by the owner of the pier, Trinidad Rancheria, and the City of Trinidad, that resulted in the opening of a new, low-to-no discharge pier in spring 2012.

Transferability
The environmental, fisheries, and economic challenges faced in Trinidad are similar to those encountered on small community waterfronts across the country, and many of the approaches used here can be applied elsewhere.

Limited resources can be overcome by forming mutually beneficial public/private partnerships. These partnership are based on common objectives in order to collectively seek funding, and cooperatively implement actions.

Region
- Pacific

Geographic Scope
- City
- Small (< 20,000)
- Rural (<500 people per square mile)

Governance Structure
- Dillon Rule

Issues
- Economic development
- Environmental impacts: resource protection, habitat loss, water quality degradation
- Regulatory factors

Tools
- Partnerships
- Stakeholder Analysis
- Visioning Exercise
- Grant
- Acquisition
- Land Trust
- Economic Analysis/Assessment
- Natural Resource Inventory
- Needs Assessment
- Comprehensive Plan
- Harbor Management Plans
- Land Use Planning

Waterfront Uses
- **Pier/dock/wharf/lift**
- **Commerical fishing**
- **Recreational fishing**
- **Charter fishing**
- **Coastal tourism**
- Public access (docks/wharfs /beach/park)
- Pier/dock/wharf/lift
- Commerical fishing
- Fish/bait shops, fish cleaning station
- Recreational fishing
- Charter fishing
- Recreational boating, kayaking, other recreational watercraft
- Coastal tourism
- Retail/commercial
- Restaurant accessible by water
- Hotel/motel/lodging providing water access

The state policy and regulatory frameworks that apply to Trinidad are likely more restrictive than those of many other states.

Some of the funding mechanisms accessed by the City are California state grants - resources will vary state-to-state. Trinidad Rancheria was also able to access funding specific to its tribal status.

Best Practices

A central theme in Trinidad's success has been the consistent process of engaging stakeholders to promote understanding, build support, form partnerships, improve planning, raise funds, and take action. Project leaders recommend these as best practices.

Build a Broad Base of Support

A key to success is the persistence of the Trinidad Rancheria Chief Executive Officer and her ability to recognize that pier redevelopment is linked to a diversity of community issues and to call on this vision to build partnerships and networks that are beneficial to all. A partnership between Green Diamond Resource Company and Trinidad Bay Watershed Council is also powerful. Green Diamond owns more than half of all the land in the watershed and has pledged staff and financial support for the Integrated Coastal Watershed Management Plan.

Involve Stakeholders from the Beginning

Before planning efforts began, the City and the Rancheria identified those individuals, groups, and agencies most invested in protection and redevelopment of harbor resources. Those stakeholders were engaged since the initial stages of planning so as to identify and address their needs and concerns. Their input was integrated as plans evolved and their involvement facilitated community consensus.

Invest in Planning

Planning is a key tool in waterfront development. The City of Trinidad is a small community with limited resources, making it necessary to tackle issues one-by-one and integrate results into a whole as progress is made. The City hires consultants for key functions such as planning and engineering, thus providing access to a wide range of expertise and resources, including grant writing to obtain financing for a variety of projects. Additionally, the development of the Integrated Coastal Watershed Management Plan provided the foundation needed to justify fund seeking proposals, which ultimately resulted in the awarding of $15 million in harbor-related grants.

Plan for Environmental Protection and Economic Development Together

Habitat and water quality protection standards for the area resulted the designation of the pier itself as a hazardous discharge due to contaminated run off from the pier, which essentially mandated the pier's reconstruction. As a means of eliminating discharges, the City and the Rancheria were able to access funds for harbor redevelopment and pier reconstruction. Also, during the Integrated Coastal Watershed Management planning process, stakeholders considered and incorporated both water quality goals and socioeconomic goals in developing the watershed plan. The plan was completed in 2008 and has since acted as launch pad for new initiatives.

Consider Putting Collaboration Before Self-Interest

Because Trinidad Rancheria was not an eligible applicant for State Water Resources Control Board funding, the City of Trinidad (which was eligible) chose to partner with the Rancheria in its own application in order to enable the Rancheria to access pier reconstruction funding. The application was successful in funding the identified pier work, but did not fund all other proposed activities.

Full Case Study Description

History

Located 300 miles north of San Francisco, Trinidad is known for its spectacular scenery, unique cultural history, and abundant natural resources. The incorporated city has a resident population of just over 300, and the Trinidad-Westhaven region has a population of roughly 2,000. Once home to the Yurok village of Tsurai, Trinidad became a hub for the gold mining, whaling and timber industries in the mid- to late-1800s. Currently the upper half of the watershed is owned by a private timber company. But, as those industries declined, residents increasingly turned to fishing for their livelihoods.

Following the construction of the Trinidad Pier in 1946 and a mooring basin soon after, Trinidad became an active fishing village, with smokehouses and a seasonal "mosquito fleet" of up to 400 salmon trollers by the late 1970s. Charter fishing operations, first established in 1952, provided recreational fishing opportunities for visitors and residents.

Over the years, the pier fell into disrepair and required replacement. When the state designated the bay as an Area of Special Biological Significance http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs_map.shtml in 1974, the pier became subject to particularly stringent water quality standards. In 2000, the pier and adjacent restaurant were purchased as a business investment by the Cher-Ae Heights Indian Community of the Trinidad Rancheria http://trinidad-rancheria.org/, a local, federally-recognized tribe. The Rancheria initiated the effort to reconstruct the pier, which would involve a complex permitting process due to the Area of Special Biological Significance. To navigate the process, the Rancheria partnered from the beginning with the City of Trinidad http://www.trinidad.ca.gov/. Then before planning began, the partners identified those stakeholders most invested in protection and redevelopment of harbor resources and engaged them in the planning process throughout. Stakeholder input was integrated as harbor redevelopment and coastal watershed management plans evolved and their involvement facilitated community consensus.

Goal

The goal of the project was to reconstruct the pier to improve both the water quality, and the social and economic vitality of the Trinidad Bay region.

Challenges & Issues

Maintaining Environmental Quality

Trinidad’s location, geography, oceanography, and storm and fog hazards, together with the bay's designation by the state as an Area of Special Biological Significance and a Critical Coastal Area http://www.coastal.ca.gov/nps/Web/cca_humco1.htm, make it impractical to develop as a larger scale fishing port. The designation also created a zero-discharge zone to maintain high water quality in the area. Runoff from the pier, which included fish cleaning waste and boat cleaning chemicals, then constituted non-point sources of pollution that were considered ‘prohibited discharges' in this zero-discharge zone. These factors made the pier itself a hazardous discharge, essentially mandating its reconstruction. In this way, the reconstruction of the pier addressed both environmental and economic goals for the community by simultaneously providing for improved water and habitat quality, and improved infrastructure for local businesses.

Regulating for Fisheries Management

Over the past 30 years, growing concerns about the status of West Coast salmon and groundfish stocks prompted the Pacific Fishery Management Council http://www.pcouncil.org/ and the State of California to implement increasingly stringent management measures for commercial and recreational fisheries. These measures included the establishment of fishery management zones, restricted areas, season limits, commercial and recreational fishery closures, and most recently the complete closure of the salmon fishery in 2008.

Cumulatively, these measures have have resulted in substantial reductions in (nontribal) commercial and recreational fishing in the region, and contributing to social and economic impacts that have altered the fisheries landscape at Trinidad.

Economic Challenges

The fishing industry cites increasing fuel and gear costs, dockage, offloading, and crab catch fees as significant issues, in addition to the loss of local fishing support services such as the fuel dock and fish cleaning station, and lack of local vessel repair, refrigeration, gear suppliers, etc.. Changing and uncertain revenues due to natural variability in crab stocks and regulatory constraints on rockfish and salmon also pose challenges.

The Rancheria's greatest challenge has been replacement of the aging pier itself. The need for its replacement has been seen as critical by recreational and commercial fishers, support businesses, and the community alike. In addition to the pier's function as a tribal investment, it directly or indirectly supports 60 local tribal and nontribal families, and generates activity that supports 25 local businesses. In addition to dockage and offloading fees, the Rancheria depends on fees for mooring rentals, boat launches, and boat washing. However, these sources of revenue have become less reliable following recent declines in recreational use that are linked to regional fishery closures.

Securing the estimated $10 million needed to complete the pier reconstruction project (an amount significantly more than the industry standard) posed a challenge, especially given resource variability and regulatory uncertainty. Raising the funds required an ongoing effort involving public/private partnerships among private organizations, and businesses, and local, state, and federal government to share costs and secure grant funding. For example, in order to access funding through the State Water Resources Control Board (http://www.swrcb.ca.gov/), the partnership between the Rancheria and the City of Trinidad proved critical, as the Rancheria was otherwise not eligible to apply on its own. To complete the project, the Rancheria accessed funding from numerous sources, including the California State Coastal Conservancy (http://scc.ca.gov/), the Headwaters Fund (http://www.theheadwatersfund.org/), the EPA Brownfields Program (http://www.epa.gov/brownfields/), the Federal Highway Administration (http://www.fhwa.dot.gov/discretionary/index.cfm), and the Bureau of Indian Affairs (http://www.bia.gov/) to support various aspects of the pier reconstruction project. A partnership between the watershed's major land owner, Green Diamond Resource Company, and Trinidad Bay Watershed Council was also valuable as the company pledged staff and financial support for the Integrated Coastal Watershed Management Plan. Additionally, leadership from the Trinidad Rancheria Chief Executive Officer helped clarify the vision of pier redevelopment as linked to a wide range of community issues. These diverse partnerships were a key to success.

Next Steps

The new pier opened in June 2012.

Key Partners

Cher-Ae Heights Indian Community of the Trinidad Rancheria, http://trinidad-rancheria.org/ City of Trinidad, CA, http://www.trinidad.ca.gov/

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Additional Information

For More Information

Waterfront Revitalization for Small Cities (1990)
http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/24463/EMNO8414.pdf?sequence=1

Quotes

"Fishing is the main reason Trinidad is an incorporated City." Mr. Savage suggests that all Trinidad stakeholders have links to fishing (mostly crab), whether it be commercial, recreational, or fishing/waterfront related tourism. Therefore the community is tied to the pier, which has likely made community consensus easier. - Jonas Savage, Environmental Director, Trinidad Rancheria (personal communication, February 10, 2012)

"It is critical to create relationships that are mutually beneficial – these relationships are a key strategy for making progress in small communities where mutual support can provide human resources, if not financial resources, to get a job done." – Jonas Savage (personal communication, February 10, 2012)

"To succeed in development work in small communities, you need to be responsive to opportunities and work in partnership, favoring collaboration at times versus protecting your own interests. It's important to recognize the value of community leaders and the enthusiasm they generate in others. Encourage them to lead and be willing to follow their lead. Working collaboratively is infectious – those involved here have gone on the apply the approach elsewhere in the community." – Rebecca Price-Hall, Grant Administrator and Watershed Coordinator, City of Trinidad (personal communication, February 2, 2012)

"Public engagement is one of the hardest, most frustrating parts of community planning – but it's the most important. If you don't bring stakeholders in at the beginning, to address their needs, interests, concerns – you will need to do it later when it is harder to accommodate. So in a way, you have to go slow to go fast." – Jonas Savage (personal communication, February 10, 2012)

"The planning process is a 5 - 10 year endeavor, and before it ends, it begins again. This is the most discouraging part to many involved with community development, but change takes time." – Jonas Savage (personal communication, February 10, 2012)

"Since the (Integrated Coastal Watershed Management) Plan was developed, $15 million in grants have been awarded - $8 million to pier redevelopment alone." – Rebecca Price-Hall (personal communication, February 2, 2012)

References

California's North Coast Fishing Communities Historical Perspective and Recent Trends: Trinidad Harbor

Fishing Community Profile. Pomeroy, Caroline; Thomson, Cynthia J.; Stevens, Melissa M. California Sea Grant College Program, Scripps Institution of Oceanography, La Jolla CA, 2010 http://ca-sgep.ucsd.edu/system/files/files/4TRNprofile_29Nov2011.pdf

Informational Public Meeting for the Trinidad Pier Reconstruction Project. Trinidad Rancheria, http://trinidad-rancheria.org/sites/trinidadrancheria.com/files/Pier%20Meeting%20Press%20Release_final_0_0.pdf

Reconstruction Project Description. Trinidad Rancheria, http://trinidad-rancheria.org/sites/trinidadrancheria.com/files/Brief%20Project%20Description.pdf

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Assembly
California Legislature

JIM WOOD
ASSEMBLYMEMBER, SECOND DISTRICT

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MLS

January 22, 2015

California Fish and Game Commission
1416 Ninth Street, Suite 1320
P.O. Box 944209
Sacramento, CA 95814

Dear Commissioners:

I am writing in support of the issuance of three experimental market squid permits for use in the 2nd Assembly District.

As you know, as part of the Market Squid Fisheries Management Plan, three experimental non-transferable market squid vessel permits were established in order to develop a squid fishery in areas previously not utilized for squid production. In recent years, the squid population has increased in the waters of the north coast and there is an interest in determining whether a squid market exists in this area.

I'm sure you are aware that at one time the communities of the north coast flourished due to a healthy fishing industry. Unfortunately, for many years their economies have been in serious decline along with the decline of our fisheries. Almost 24% of the residents of Fort Bragg and Eureka live below the poverty level. Unemployment exceeds the national average and these areas are currently experiencing the loss of more jobs. The opportunity to create local jobs in the fishing industry and additionally providing a product that can be used locally would be a boon to their economy.

I appreciate your serious consideration of these permit applications. If you have any questions, please do not hesitate to contact me.

Respectfully,

JIM WOOD
Assemblymember, 2nd District

Printed on Recycled Paper

From:	Ashcraft, Susan@FGC
To:	FGC
Cc:	Mastrup, Sonke@FGC
Subject:	FW: Congratulations!! from CA Wetfish Association
Date:	Thursday, February 12, 2015 10:33:05 AM
Attachments:	CA Squid Marketing Summary.pdf SavingSeaFood - D.B. PLE...ifornia Squid Marketing".pdf

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For March MRC folder

From: Diane Pleschner-Steele [mailto:[redacted]
Sent: Wednesday, February 11, 2015 6:54 PM
To: Jack Baylis
Subject: Congratulations!!

Hi President Baylis (Jack),
Congratulations on your appointment as new Commission president!! Thank you also for your ongoing special interest in the squid fishery.
I watched the meeting online today and paid close attention to Commissioners' comments on your desire to support sustainable harbor communities. I also watched the testimony and read the written comments from the fishermen who are seeking the three experimental squid permits. Their pleas are compelling.

When I was writing features for Pacific Fishing and other magazines many years ago (in my earlier life), I spent a lot of time in northern CA. I trolled for salmon with my husband out of Noyo Harbor, and we wintered over up there one year in the 19980s when he was diving sea urchins, so I'm well aware of the harbor culture. That harbor sustained itself on a seasonal mix of salmon, Dungeness crab, pink shrimp and groundfish, especially blackcod and rockfish, and sea urchins also became an important fishery. The cuts in groundfish quotas and buyback of many of the draggers in N.CA. really impacted not only Ft. Bragg/Noyo, but also Eureka and Crescent City. In those days groundfish was the year-round volume fishery complex that really supported the infrastructure, along with salmon in summer, Dungeness in winter, and sea urchins.

I think it's safe to say that we all are interested in sustaining vibrant harbor communities in California — and that includes Half Moon Bay, Monterey, Moss Landing, Ventura, Port Hueneme, San Pedro — all of which rely on market squid to maintain infrastructure and economic vitality over time. it's important to view the "big picture" in ongoing discussions, in my opinion. As you're aware, and as we discussed over lunch in the family dining room at State Fish Company in San Pedro in December 2013 — more than a year ago (good grief! time flies!!), market squid is the economic driver of California's historic wetfish industry, and protecting this fishery is essential too, as it represents the lion's share of California's fishing economy.

I heard two issues emerge from today's discussion: first was the urgency of the fishermen who want experimental squid permits ASAP, soon enough to fish this season. The overarching issue, however, is the big picture look at sustaining fishing communities as a whole.

In that regard, the wetfish fisheries have always relied on a complex of fisheries, with squid the most important when it's available. Wetfish fishermen understand the dynamics of all the

coastal pelagic (CPS) stocks — we've had an amazing period of high squid productivity over the past few years, but as our research is now showing, that cycle is changing. We're again facing El Niño conditions in S.CA. this year, which we believe contributed to the superabundance of squid in Monterey and northern CA last season. But when the "real" El Niño hits, still predicted for later this year and into next spring, squid typically take a hike altogether.
Long story short, a sustainable harbor, whether it's Noyo, Monterey or San Pedro, needs more than one highly dynamic stock to keep the ice plants and fuel docks open.

I will look forward to further discussion on the big picture issue of sustainable harbor communities. I"ll be bringing these issues to the CWPA Board prior to the MRC meeting in March, and I hope we can offer some ideas on how to help achieve long-term goals.

Meantime, I would appreciate the opportunity to talk to you further about a couple of things that I heard you say with regard to marketing local "fresh" squid. You quoted an estimate from some source that more than 90 percent of CA squid is exported. Perhaps you'll recall the presentation that I made when this topic came up at a Commission meeting some time ago — based on a quick poll of processors at that time, I estimated that close to 30 percent of our squid harvest is consumed here in the domestic market, whether processed here (at double the cost) or exported for cleaning and reimported.
The two key points that I learned in my survey: except for a very small volume that goes to ethnic markets primarily in LA and SF, the overwhelming preference in the local market is for cleaned squid — and because squid's shelf life in fresh state is only a couple of days with impeccable handling, freshness is preserved by flash freezing the squid as quickly as possible. I'm attaching FYI my earlier presentation, along with a piece that we published in response to an op ed in the LA Times by Paul Greenberg, who got a few things wrong…

I also wanted to let you know that our squid research is providing some fascinating insights into squid behavior. We received a small contract from the SW Fisheries Science Center last summer to extend our surveys into Monterey, as far north as Half Moon Bay. We ran two surveys last summer and just completed a third survey in Monterey in January. We will be able to repeat the Monterey cruises again this year, in addition to our core surveys in the S.CA. Bight. We would love to present an update to the Commission at an appropriate time later this year (after our summer survey would be best timing for us). Please point me in the proper direction to learn the process for securing time on the agenda.

Thanks again for your dedication to marine resources (all resources) and your interest in the squid fishery. And again, Congratulations!! I'll look forward to working with you and the other Commissioners on emerging fishery issues.

All the best,
d.

Diane Pleschner-Steele
Executive Director
California Wetfish
Producers Association
805.693.5430
Fax: 805.686.9312
PO Box 1951
Buellton, CA 93427

State of California
Department of Fish and Game

Flex your POWER

Memorandum

Date: ~~May 15~~ June 1, 2012

To: Sonke Mastrup
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director

Subject: Agenda Item for June 20-21, 2012, Fish and Game Commission Meeting Re: Recommendation to Amend Regulations for the Commercial Take of Kelp and Other Aquatic Plants (Sections 165 and 165.5, Title 14, CCR)

On February 2, 2012, the Fish and Game Commission (Commission) directed the Department of Fish and Game (Department) to provide an approach and time line to revise antiquated kelp and other aquatic plant regulations (Sections 165 and 165.5, Title 14, CCR). The purpose of this informational item is to begin a formal discussion to improve management of marine algae. The Department recommends a three-phase reconstruction approach over several years to improve management and enforceability of the regulations.

Phase 1. Boundaries and Improved Guidelines

Request notice authorization at the Commission's October 3-4, 2012 meeting to consider these amendments to the existing regulations:

- Enhance descriptions of Administrative Kelp Bed (Kelp Bed) boundaries with spatially explicit latitude and longitude coordinates.
- Improve management of the mechanical harvest of giant kelp (*Macrocystis pyrifera*) by requiring a Commission-approved kelp harvest plan for all kelp beds.
- Improve spatial reporting requirements for kelp harvest.

Phase 2. Fees

Conduct public scoping meetings in 2012-2013, with assistance from the Commission, to explore options for increasing existing commercial license fees and royalty rates for harvesting giant kelp and bull kelp (*Nereocystis luetkeana*), edible seaweed, and agarweed to cover the long-term costs of managing these algae. By October 2013, the Department intends to have collected the necessary information to have had detailed discussions with the Commission's Marine Resources Committee.

After discussion in the Commission venue late in 2013, the Department will be prepared to ask the Commission to authorize notice of its intent to amend existing regulations concerning commercial license fees and royalty rates for the aforementioned resources.

Phase 3. Kelp Management and Harvest

Over the next three years (2013-2016), conduct a full review and potential rewrite of existing regulations to address management and harvest concerns identified by the Commission, kelp harvesters, and the public. This phase would include the following elements:

- Identify management and harvest issues and challenges by consulting and collaborating with kelp harvesters, the scientific community, and the public.
- Conduct public scoping meetings on a proposed project.
- Provide options for the Commission to consider revising the regulations.
- Draft an Initial Statement of Reasons for kelp regulations.
- Draft an Environmental Impact Report.

The Department looks forward to receiving input and guidance on this concept and to providing more detail and opportunity for discussion at future Commission and Marine Resource Committee meetings.

If you have questions or need additional information, please contact Ms. Marija Vojkovich, Regional Manager in the Department's Marine Region, by telephone at (805) 568-1246.

ec: Marija Vojkovich, Regional Manager
Marine Region
mvojkovich@dfg.ca.gov

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October 22, 2015

Commissioner Eric Sklar and Commissioner Anthony C. Williams, Co-Chairs
Marine Resources Committee
California Fish and Game Commission
1416 Ninth Street, Room 1320
Sacramento, CA 95814

RE: Marine Resource Committee Meeting Agenda Item 10(A): Fisheries Bycatch Workgroup

Dear Commissioners:

Effectively assessing and minimizing bycatch is a fundamental cornerstone of sustainable fishery management. The unintended catch and discarding of marine life is widely considered among the top ecological impacts of fisheries, and can also have major economic ramifications. California generally boasts clean, sustainable fisheries that serve as a model for the world. However, some California fisheries have identified bycatch concerns that have yet to be addressed and many fisheries lack sufficient information on bycatch. Minimizing bycatch is a primary goal of the Marine Life Management Act and there is a need to develop a systematic approach for addressing this critical conservation issue.

We strongly support the newly formed Fisheries Bycatch Workgroup to be overseen by the Marine Resource Committee. We have provided suggestions to Commission staff regarding the charge and activities of this Workgroup, including developing a common language around bycatch, drafting potential revisions to the MLMA Master Plan "Bycatch" section, drafting an overarching Commission policy on bycatch, proposing a consistent criteria for determining "acceptable levels" of bycatch that can be applied across diverse California fisheries, and developing a "Bycatch Action Plan". To this end, we are submitting the attached document "An Overview of Fishery Bycatch Issues in California State-Managed Fisheries", which was co-authored by former Oceana Research Intern Azian Akpan from Cornell University. We hope you find this document to be a helpful primer on the suite of issues involved in managing fishery bycatch, and that it helps the Fishery Bycatch Workgroup hit the ground running toward successful outcomes.

We look forward to participating in this newly formed Fishery Bycatch Workgroup to constructively develop a path forward for addressing bycatch issues in a collaborative forum with other stakeholders.

Sincerely,

Geoffrey Shester, Ph.D.
California Campaign Director, Oceana

CC. Sonke Mastrup, Executive Director, California Fish and Game Commission
Susan Ashcraft, Marine Advisor, California Fish and Game Commission
Craig Shuman, Marine Regional Manager, California Department of Fish and Wildlife

An Overview of Fishery Bycatch Issues in California State-Managed Fisheries

Azian Akpan
Oceana Research Intern
Cornell University

Geoffrey Shester, Ph.D.
California Campaign Director
Oceana

October 22, 2015

OCEANA Protecting the World's Oceans

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Acknowledgments: The authors wish to thank California Fish and Game Commission Marine Advisor Susan Ashcraft and Oceana staff Ashley Blacow, Jon Warrenchuk, and Mariel Combs for their reviews and feedback on earlier drafts of this report.

EXECUTIVE SUMMARY

The goal of this report is to provide a synopsis of topics relevant to the current and future goals for California bycatch management policy. The immediate purpose of the document is to act as a resource for the California Fish and Game Commission's Bycatch Working Group and the upcoming update of the Marine Life Management Act (MLMA) Master Plan pertaining to Bycatch. Section 1 of the report summarizes key information in the current MLMA, namely bycatch goals and definitions, and subsequently includes analysis and recommendations on strengthening the policy. The key recommendations are to 1) clarify ambiguous language by incorporating more specific vocabulary within existing California Game Code definitions for bycatch and discards, and 2) develop explicit criteria to determine acceptable levels of bycatch in a manner that can be applied consistently and comprehensively for all California state-managed fisheries. Prior to exploring further what these criteria may look like, the report summarizes existing bycatch metrics: identifying and summarizing common metrics, explaining their specific applications and limitations, and informing on guidance in how to correctly interpret and compare metrics. After establishing this framework for approaching bycatch metrics, Section 1 concludes with a review of bycatch criteria utilized by two fishery assessment methods: Seafood Watch and the Marine Stewardship Council. The intent of this section is to provide insight and specific guidance on features to consider in creating statewide criteria for acceptable bycatch. The final section of the document is an overview of bycatch management strategies, featuring guidance for when a given technique is appropriate to employ, real-world examples of the technique, caveats, and summary recommendations and commentary.

INTRODUCTION

Bycatch, the incidental catch of non-target fish and ocean wildlife, is an issue of concern in maintaining sustainable fisheries. California is an international leader in sustainable fishery management, and minimizing bycatch is one of the primary goals of California's Marine Life Management Act (MLMA). Many of California's state-managed fisheries are very clean from a bycatch perspective, however, some California fisheries have identified bycatch concerns, and many have insufficient data on bycatch. The current gaps in bycatch information, due to inconsistent and undetailed data collection, result in an overall lack of knowledge around the exact magnitude of the issue in certain fisheries.

The California Fish and Game Commission is required to regularly review and assess bycatch information in certain fisheries (e.g., California halibut trawl grounds), and the MLMA requires that fishery management plans contain measures to minimize bycatch. However, the Commission currently lacks an overall strategy, policy, and means to prioritize bycatch concerns for management. There is a need for consistent, comprehensive bycatch reporting so that progress can be tracked and management can be held accountable. Ultimately, fishery management measures should aim to stop harmful bycatch and wasteful discarding by employing adequate monitoring and using innovative measures to control the problem.

The purpose of this document is to assist the Commission's Bycatch Working Group in its initial task and to inform updates and revisions to the Marine Life Management Act (MLMA) Master Plan sections related to Bycatch. This document provides relevant background information to facilitate these decision-making processes.

SECTION 1: BYCATCH ASSESSMENT

1.1 Marine Life Management Act Bycatch Goals

The Marine Life Management Act (MLMA) is California law for the management of all marine wildlife taken by commercial and recreational fishermen. The MLMA emphasizes an ecosystem-based perspective for sustainability that is rooted in science-based management.[1] Current California law acknowledges bycatch as a key element in achieving sustainability within state recreational and commercial marine fisheries (CA FGC §7056, see below).

§7056. "In order to achieve the primary fishery management goal of sustainability, every sport and commercial marine fishery under the jurisdiction of the state shall be managed under a system whose objectives include all of the following:
…(d) the fishery limits bycatch to acceptable types and amounts, as determined for each fishery."

Addressing bycatch is integral component of FMPs

In achieving the objective of limiting bycatch to acceptable types and amounts, the MLMA mandates the development of fishery management plans (FMPs) as a tool.
One of the long-term goals of the MLMA is to develop fishery management plans (FMPs) for all the State's major recreational and commercial fisheries. FMPs function as comprehensive documents featuring best available scientific information, and are intended to serve as the primary basis for managing California's recreational and commercial fisheries (CA FGC §7072(a)-(b)). Information on bycatch and discards are required components of all FMPs under the MLMA (CA FGC §7085, see below).

§7085. Consistent with subdivision (b) of Section 7072, each fishery management plan or plan amendment prepared by the department, in fisheries in which bycatch occurs, shall include all of the following:

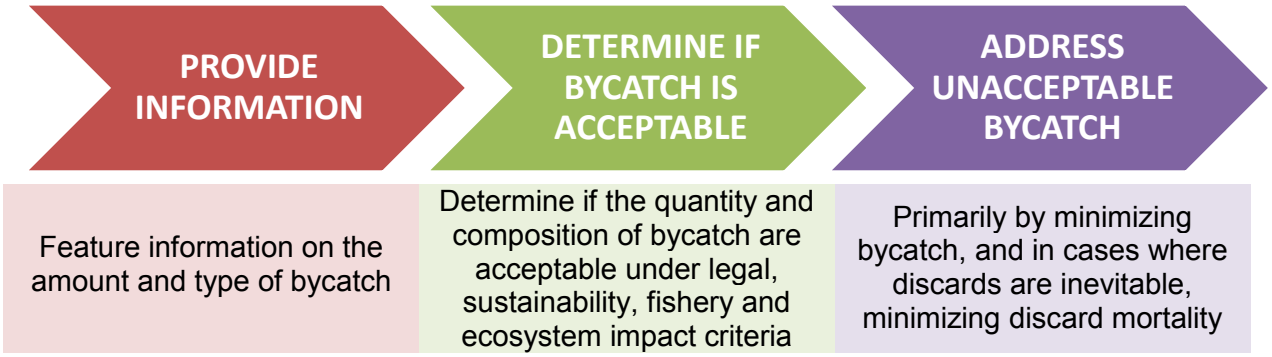
- Information on the amount and type of bycatch
- Analysis of the amount and type of bycatch based on the following criteria:
  - Legality of the bycatch under any relevant law
  - Degree of threat to the sustainability of the bycatch species
  - Impacts on fisheries that target the bycatch species
  - Ecosystem impacts
- In the case of unacceptable amounts or types of bycatch, conservation and management measures that, in the following priority, do the following:
  - Minimize bycatch
  - Minimize mortality of discards that cannot be avoided

All FMPs are required to include information on the amount and type of bycatch and to have bycatch maintained within appropriate limits (legally and ecologically).

[1] CA DFW website (Accessed July 2015). Marine Life Management Act Summary <https://www.wildlife.ca.gov/Conservation/Marine/MLMA>

Existing California Bycatch Assessment Criteria for FMP fisheries

The MLMA outlines a three-step approach for addressing bycatch for fisheries under FMPs (CA FGC §7085):



FMPs are intended to facilitate the assessment of acceptable levels of bycatch, as they are required to provide best available scientific information, and are mandated to include thorough information on a fishery's bycatch status. However, addressing bycatch in this way has only been done in four state-managed FMPs completed to date (abalone, nearshore, white seabass, and market squid) since the establishment of the MLMA in 1999. There are no consistent criteria for determining acceptable levels of bycatch across state-managed fisheries. The MLMA Master Plan for Fisheries ("Master Plan") was created as a means to prioritize fisheries based on their needs for an FMP. The current language of the Master Plan identifies issues relevant to achieving this objective.

2.5 Issues Relevant to the Development of Fishery Management Plans

"It has become clear during the development of this initial Master Plan that several issues need extra consideration or clarification; and the full implementation of the MLMA will take several years. Policies or guidelines on issues such as allocation, bycatch, optimal yield…are crucial to the success of an FMP" (MLMA Master Plan, 2-11)

According to the MLMA Master Plan, the goal is to eventually have FMPs for all fisheries, but this is a long process. The MLMA acknowledges that the creation of FMPs for all fisheries will take a long time, but it doesn't establish a clear way to systematically assess bycatch for non-FMP fisheries, which is the majority of existing state fisheries.

Need for Assessment Criteria for non-FMP fisheries

The MLMA currently mandates that "the fishery limits bycatch to acceptable types and amounts, as determined for each fishery" (CA FGC §7056(d)). This language is intended to be complemented by a FMP that allows for systematic and thorough assessment of bycatch. Aside from four fisheries (abalone, nearshore, white seabass, and market squid), fisheries in California are managed under different authorities, each using different methods and management systems that will include varied amounts of information on bycatch. The Commission has significant regulatory authority to implement measures to reduce bycatch in fisheries that aren't yet in FMPs. To do this, it is necessary to establish a new set of criteria that can be utilized for both FMP and non-FMP fisheries, ensuring that bycatch is assessed consistently and robustly across all of California's state managed fisheries.

1.2 Clarifying California Bycatch Definitions

Language around bycatch is susceptible to ambiguities and there are different definitions across statutes and jurisdictions in fisheries, therefore it is essential to review the language and definitions the California Fish and Game Code and MLMA Master Plan use when discussing bycatch issues, and to provide clear definitions for use in a common language about bycatch in California fisheries.

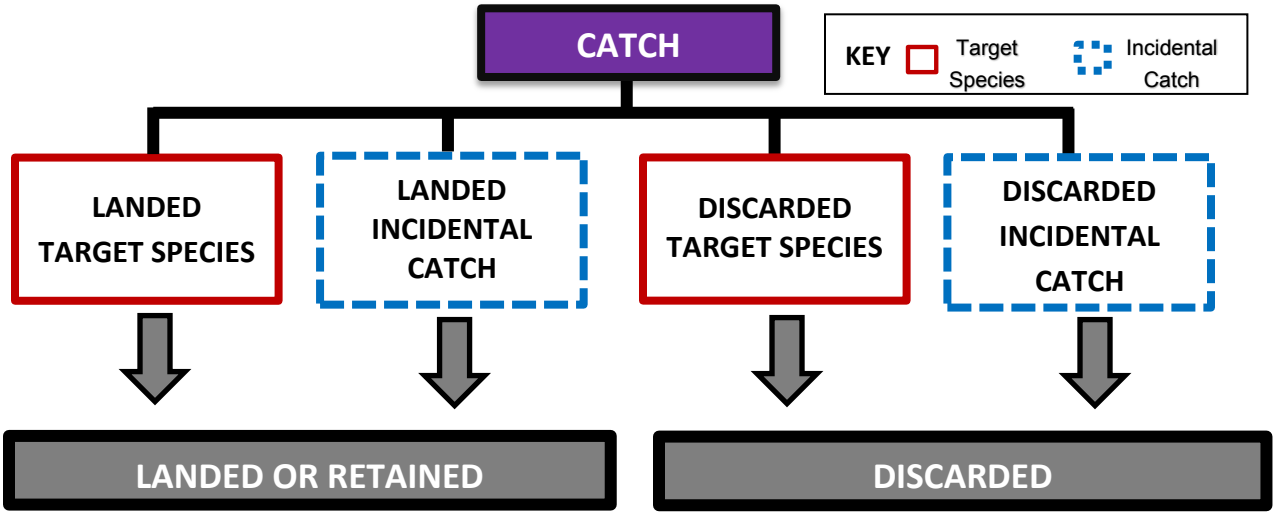
Existing California State Definitions

Bycatch "Fish or other marine life that are taken in a fishery, but which are not the target of the fishery. Bycatch includes discards." (CA Fish and Game Code § 90.5)

Discards "Fish that are taken in a fishery but are not retained because they are of an undesirable species, size, sex, or quality, or because they are required by law not to be retained." (CA Fish and Game Code § 91)

California's current definitions capture some key concepts, but further clarification and specificity would be helpful for future management processes. Bycatch is a very complex issue, and the language that is used to discuss different types of bycatch should be very inclusive, as well as specific, so that the policy communicates clearly how any given scenario should be addressed.

Clarifying definitions to account for diverse bycatch scenarios



One of the primary conservation concerns about bycatch is the mortality of discarded marine life, which results in impact without benefit (i.e., discard mortality). This concern arises in several specific situations, thus building on existing state definitions with more specificity allows these issues to be communicated effectively. For example, the presence of bycatch is not concerning in all scenarios because it doesn't consistently result in wasteful dead discards (see figure above). Some bycatch is landed and sold, which may not be a cause for concern if it is

managed sustainably and consistent with Commission goals (for example, it may be desirable in some scenarios to catch multiple species with one fishing gear).

Meanwhile, not all discards are equally concerning. Regulatory discards (such as releasing endangered species, or adhering to landing size minima/maxima) are sometimes encouraged to support healthy populations of target species, or prevent targeting of certain species. However, discretionary discards where catch is disposed to keep more valuable fish, could have negative and wasteful impacts that thwart sustainable goals.

As there are no currently existing state definitions for regulatory and discretionary discards, the figure below provides a description of how they are defined in federal guidance.

REGULATORY DISCARDS	
Catch that is required to be discarded when caught, or retained and not sold[2]	
Examples:	
ETP species	Endangered, threatened, and protected species
Below MLS	When catch is below minimum landing size[3]
Quota	When vessel doesn't have allocated quota for species[3]

DISCRETIONARY DISCARDS	
Catch that is discarded because of undesirable species, size, sex, quality etc.[2]	
Examples:	
Economic discard (High Grading)	Marketable species not retained because they are of an undesirable size, sex, quality, etc.[4]
Economic discard (No Market)	When there is no market for certain species[3]

Subsequent language in the MLMA Master Plan alludes to these diversities in the outcomes of bycatch (see MLMA Master Plan, 2.5.2 below), but even then, they are only vaguely touched upon. More importantly, these diversities should be encompassed in the initial definitions.

> "Bycatch occurs in most sport and commercial fisheries, but the amount varies considerably based on the type of gear used, fishing techniques, fish behavior, and so on. Marketable or desirable fish are kept by sport and commercial fishermen. Fish that are undersized, out of season, or undesirable are discarded by both sport and commercial fisherman, and may be alive or appear to be alive when discarded". (MLMA Master Plan, 2.5.2 Bycatch)

There are many diverse situations to consider, that hold different implications and require different management actions. Due to these complexities, it would be valuable to have separate definitions that reflect the different outcomes for bycatch and discards.

[2] National Marine Fisheries Service (1998). Managing the nation's bycatch: priorities, programs and actions for the National Marine Fisheries Services. Page 10.
[3] Oceana (2011). By-Catch and Discard Management: The Key to Achieving Responsible and Sustainable Fisheries in Europe. Page 1.
[4] Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA) of 2006. 104-297 (9): Page 6.

Clear, inclusive definitions are essential for effective management

In management, ambiguities such as these undermine efficiency in achieving policy objectives. It is therefore essential to ensure there is a consistent vocabulary that clearly encompasses the diversities in definitions for bycatch, and accounts for managing the type of bycatch and Discards that are of concern. The upcoming MLMA Master Plan update provides a foundation for future management; clear, inclusive definitions are a fundamental building block for this foundation. Distinct vocabulary is necessary to understand the full implications of a given bycatch scenario. Incorporating a more specific vocabulary within state definitions will promote effective management. The following contains recommended specific vocabulary to achieve this in alignment with existing California Game Code definitions:

Recommended complementary bycatch vocabulary

Bycatch composition – a measurement that illustrates the nature of observed bycatch by categorizing it into subgroups. Examples include:

> **Bycatch composition by vulnerability** – a measurement that illustrates the vulnerability levels of species caught incidentally
>
> **Bycatch composition by species** – a measurement that illustrates the species groupings of incidental catch

Discard mortality – Dead catch that is not retained and unobserved mortality due to a direct encounter with fishing gear

Discard rate – a measure of frequency for which a fishery catch is not retained

> **Discard rate *by number*** – the number of animals not retained
>
> **Discard rate *by weight*** – the collective weight of animals not retained
>
> **Discard rate *per landings*** – measure calculated by discards divided by total landings
>
> **Discard rate *per total catch*** – measure calculated by discard divided by total catch, where total catch = landings + discards
>
> **Discard rate *per unit revenue*** – measure of the economic value of discarded catch

Discretionary discards – Catch that is not retained because they are of an undesirable species, size, sex, quality, etc.

Post-release survival (or discard mortality rate) – the measure of release viability of discarded catch. For some species (i.e. Groundfish) cautionary rate of 100% discard mortality is assumed, but for others, calculated based on condition of animal upon release (i.e. visible injury)

Regulatory discards – Catch that is required by law not to be retained

Retention rate – landed target species and retained bycatch as a percentage of total catch

1.3 Bycatch Metrics

Comparing the issues of bycatch across fisheries is not always an intuitive process. Without accounting for the vast diversities across fisheries and how data on bycatch is collected, it is challenging to compare (and subsequently prioritize) bycatch issues for fisheries within the state. There are a variety of bycatch metrics that are used to standardize data. Bycatch ratios, mortality rates, and discard percentages are some metrics used in quantifying bycatch. These bycatch metrics are not interchangeable, as they provide different information about bycatch. For example, some methods will express bycatch in terms of weight, while another will represent bycatch in terms of number of individual animals. Being aware of the information a given metric provides is important to interpreting bycatch in fisheries. The following pages will provide an overview of common bycatch metrics, and what can and cannot efficiently convey.

TYPE OF DATA: Bycatch, discards and retention

In bycatch metrics, the quantitative measurement can be based on bycatch, retention or discards data. Commonly, these data types are expressed in terms of rates, ratios, percentages, or total quantities. Although bycatch, retention and discards metrics provide information relevant to bycatch, each of these three measures allows for certain specific information about bycatch. It is also important to know how the data is calculated. For example, discard rates are commonly calculated as discards divided by *total catch* (with total catch equaling landings plus discards), but in some cases, are calculated as discards divided by *landings*. With discards/landings, discard rates calculated can be over 100%, whereas this is not possible for discards/total catch (as it is impossible to discard more than your total catch[5], but is very possible to discard more than you land). Therefore, it is necessary to clarifying numerator and denominator when reporting and comparing rates across fisheries.

Discards / landings ≠ Discards / total catch

Numerical ranges for these metrics are different, so directly comparing the two yields erroneous results.

It is possible for discard/landings > 100%
Discards/total catch is ***always*** ≤ 100%

General rule-of-thumb Awareness of units and calculations (and converting to consistent units prior to comparing) is a necessary practice when interpreting metrics

BYCATCH METRICS	DISCARD METRICS	RETENTION METRICS
Measurement of total incidental catch	**Measurement of total disposed catch**	**Measurement of total utilized catch**
All non-target catch	*Regulatory and discretionary discards of target and bycatch*	*Landed target catch and retained bycatch*
Advantages Informs the selectivity of fishing practices • Indicates portion of catch that is incidental **Shortcomings** Does not inform of the outcome of bycatch (i.e. retained vs. discarded)	**Advantages** Informs sustainability of fishing practices • Indicates portion of catch that is disposed **Shortcomings** Does not inform on the magnitude of incidental catch	**Advantages** Informs sustainability of fishing practices • Indicates portion of catch that is utilized **Shortcomings** Does not inform on the magnitude of incidental catch

[5]Using mathematical definition, Total Catch = Landings + Discards. Discards can be equal to total catch, but never greater (Impossible for discards be greater than total catch, because it is impossible for landings to be less than zero).

UNITS: Bycatch by number versus by weight

Typically, bycatch is either measured by counts or by weight. These units are advantageous in certain scenarios: numerical are better when dealing with rare species, whereas weights are preferential when dealing with large quantities of biomass.

The uncertainty in what a bycatch measurement represents is exacerbated if the measurement is not affiliated with a specific species. This makes interpreting the metrics more complicated, as it makes accounting for the bycatch implications for a certain species impossible.

100 KILOGRAMS OF BYCATCH

300 Pacific Sardines[6] ≈0.33 kg. each	8 White Sea Bass[7] ≈12.5 kg. each

5 COUNTS OF BYCATCH

5 Dungeness Crabs[8] ≈5 kg. total	5 Green Sea Turtles[9] ≈750 kg. total

Even when the species is known, measurements are still prone to ambiguities that cloud the implications of bycatch data. As displayed below, there are vast and relevant differences between adults and juveniles of the same species. Knowing whether bycatch is a large adult or a small juvenile is just one example of the wide breath of scenarios a standard measure can encompass.

150 KILOGRAMS OF BLUEFIN TUNA

1 Adult[10] ≈150 kg.	100 Juveniles[11] ≈1.5 kg. each

5 COUNTS OF SALMON

5 Full-Grown Adults[12] ≈90 kg. total	5 Juveniles[13] <1 kg. total

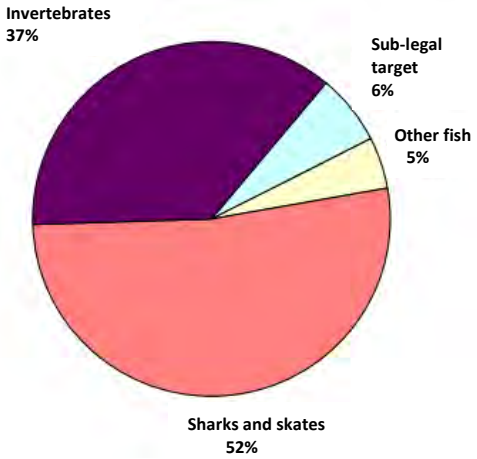
[6] Image from NOAA <http://www.fishwatch.gov/seafood_profiles/species/sardine/species_pages/pacific_sardine.htm>
[7] Image from San Diego Reader <http://www.sandiegoreader.com/news/2015/mar/11/fish-report/>
[8] Image from Alaska Department of Fish and Game <http://www.adfg.alaska.gov/index.cfm?adfg=dungenesscrab.main>
[9] Image from Widecast
< http://www.ticotimes.net/2013/11/05/conservation-group-finds-70-dead-sea-turtles-off-costa-rica-s-pacific-coast>
[10] Image from Fishing Website <http://www.fishing.net.nz/forum/id-your-fish-here_topic64723.html>
[11] Photo Credit: Ken Neill <http://phys.org/news/2011-08-global-status-tuna-billfish-stocks.html>
[12] Image from USGS <http://wfrc.usgs.gov/fieldstations/hq/chinook.html>
[13] Photo Credit: M Sparkman <http://www.savetheredwoods.org/grant/salmon-numbers-fall-but-restoration-offers-hope/>

BYCATCH COMPOSITION METRICS

Interpreting bycatch can be very reliant on context; therefore the specificity of bycatch data is crucial. Bycatch composition metrics can be valuable tools in communicating important details on the nature of observed bycatch.

SPECIES COMPOSITION

Composition of Fish Discards



Expressing bycatch or discards in terms of species composition provides helpful information. The figure to the left displays a hypothetical bycatch scenario, grouping discarded species into four major categories.

Valuable information displayed by example:

- More than half of fishery's discards is sharks and skates
- 89% of discards are sharks, skates and invertebrates

Ideally, this information would be more specific, but this alone informs on general trends in incidentally captured species.

Bycatch composition can be a helpful measurement in illustrating the characteristics (and subsequently implications) of observed bycatch

VULNERABILITY COMPOSITION

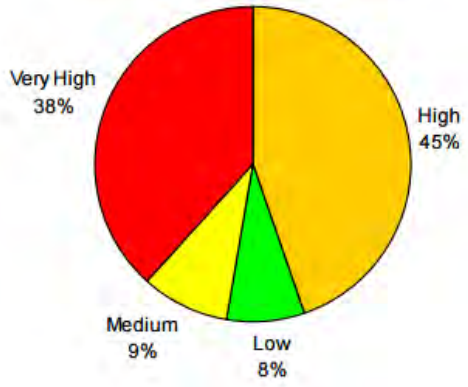
Composition data can also communicate valuable information on bycatch in terms of species vulnerability. The example to the right expresses hypothetical discarded catch according to FishBase vulnerability scores[14].

Valuable information displayed by example:

- 83% discarded species ranked High or Very High in vulnerability

This information should be complemented with specific species information, but nonetheless can deliver important summary information on the ecological impacts of bycatch.

Composition of Fish Discards according to FishBase Vulnerability Scores



[14] FishBase is an international database featuring comprehensive species data. The FishBase vulnerability scores are based on information (including but not exclusively) on age at first maturity, annual fecundity, natural mortality, and geographical range.

BYCATCH MORTALITY METRICS

Metrics on mortality inform on the impact of bycatch by the survivorship likelihood of a species. A caveat for this metric is survivorship of incidental catch can be variable, and influenced on a combination of factors, including species, gear types, handling methods and geographical areas.

Discard mortality and post-release survival

Discard mortality rates and post-release survival are measurements that estimate the portion of discards that die. These estimates are only available for certain species, and require observer data to calculate. For example, discard mortality rates are estimated from observer data detailing the release viability or injury of halibut during incidental catch for the Pacific Halibut and groundfish fisheries in Alaska.[15]

Real life example: Alaskan octopus: Discard mortality metrics are highly variable across both species and gear types[16]

Typically for federally managed groundfish in Alaska, discard mortality is assumed to be at the conservative rate of 100%. Unlike many groundfish, octopi do not have a swim bladder, thus sudden pressure from being brought to the surface does not cause traumatic injury. Because of this, there have been efforts to better estimate discard mortality of octopus and only count dead octopus toward the overall "take" of the fishery.

Observer special projects (conducted in 2006 – 2007, and 2010 – 2011) are exploring the potential of this measure in studying the release conditions of octopus bycatch. These special projects have resulted in data detailing trends in survivorship based on gear types:

- POT GEAR: Less than 5% octopus dead or visibly injured
- BOTTOM LONGLINE GEAR: Approximately 20% of octopus dead or injured
- TRAWL GEAR: 50 – 85% of octopus were dead or seriously injured
    - Survivorship decreased because trawls have longer time between capture and processing out of all other gear types

Further research into post-release mortality will enable better estimates of catch accounting, to give "credit" for species that are released alive. Octopus bycatch survivorship is a great illustration of how species with similar habitats can vary significantly in discard mortality, as well as how survivorship varies greatly by gear type.

[15] G.H. Williams (2011). Incidental catch and mortality of Pacific Halibut 1962 – 2011. IPHC Report of Assessment and Research Activities. [Information and Image]

[16] Conners, E.M. 2012. Discard mortality for octopus. NOAA Fisheries, Alaska Fisheries Science Center. Status of Stocks & Multispecies Assessment Program. http://www.afsc.noaa.gov/quarterly/jfm2012/divrptsREFM9.htm

NORMALIZING BYCATCH DATA BY REVENUES

Metrics incorporating monetary values can be helpful in communicating the economic and ecological implications of bycatch. It allows a more a direct assessment of the tradeoffs inherent in reducing bycatch. Moreover, normalization can be utilized as a tool for comparison, enabling the cross-analysis of fisheries that are vastly different in target species and fishing methods.

Example Calculation Method[17]

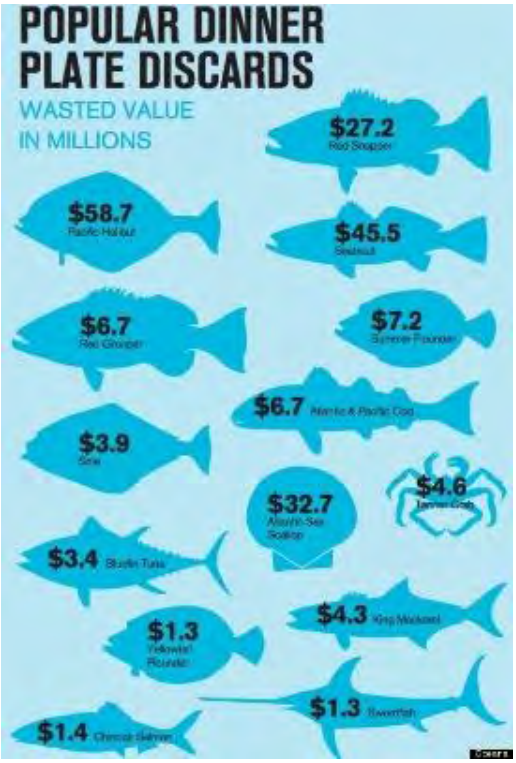
Keledjian et al.'s report on the economic price of bycatch features an example of a calculation procedure that can be used to put a price on discards. These calculations factor in both reported and unreported bycatch, relying on the following assumptions on unrecorded bycatch. These assumptions vary based on the magnitude of the estimates (low to high end).

Assumptions made in accounting for unrecorded bycatch

i. Low end = negligible
ii. Mid-range = ½ the average rate of other fisheries in region
iii. High-end = the average rate as other fisheries in each region

The next step is applying the appropriate monetary value to the bycatch. This calculation's main assumption is that unreported discards were half the regional average in value (for mid-range estimates) and equal to the regional average (for high-end estimates). Values were calculated by:

Discard Monetary Value of a species
= Discards (lb.) x price/pound ($USD/lb.)



Caveats/Assumptions with this approach

Calculations don't account for include cost of retaining bycatch species onboard until the point of sale (varies considerably from vessel size and amount and value of target and non-target species within fishery)

A Minimum Estimate

This approach may underestimate the total value of bycatch because it does not include future value of discarded fish, their unrealized offspring, their functional roles in the ecosystem, or the larger losses in total sales and jobs for the seafood industry and overall economy.

[17] Keledjian et al. (2014) Wasted Cash: The Price of Waste in U.S. Fishing Industry. Oceana. http://oceana.org/reports/wasted-cash-price-waste-us-fishing-industry

1.4 Bycatch Assessment Criteria Used Elsewhere

As the existing MLMA does not have a consistent criteria for determining acceptable levels of bycatch, it may be valuable to look at existing criteria elsewhere as guidance in factors to consider in developing a clear acceptable bycatch criteria for California state-managed fisheries. We have included the criteria used by existing wild seafood sustainability assessments used by the Monterey Bay Aquarium's Seafood Watch Program (Appendix 1) and the Marine Stewardship Council (Appendix 2). These criteria include several useful principles and components, summarized below:

Summary and Comparison of Bycatch Criteria

Seafood Watch	MSC Sustainability Certification
GUIDING PRINCIPLES/MISSION STATEMENT	
• Minimize bycatch • Fishing mortality does not threaten the population or impede the ecological role of any marine life	Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.
CRITERION COMPONENTS	
• Inherent Vulnerability • Abundance • Fishing Mortality • Modifying Factor: Discards and Bait Use	• Secondary Species Outcome • Secondary Species Management Strategy • Secondary Species Information
UNIQUE ADVANTAGES	
• Has detailed comprehensive definition for main bycatch species • More geared and specific to assessing fish stock • Scoring scheme translated into real life terms (i.e. "high concern, low concern")	• Considers minor bycatch species in addition to major bycatch species • More policy and management-oriented • Emphasizes confidence in data used in scoring
LIMITATIONS IN APPLICATION TO CALIFORNIA BYCATCH CRITERIA DEVELOPMENT	
• Does not account for minor bycatch species • Does not consider policy in management, a noteworthy factor in maintaining and promoting sustainable practices • Conservation concern thresholds do not consistently err on the side of caution (i.e. permits qualification for "low concern" abundance rating even if there is significant uncertainty or controversy in stock assessment estimates)	• Maintains raw score scheme and does not provide interpretation of scores in real life terms • Is less thorough in scientific assessment of species, because criteria must be general enough to account for any unit of assessment seeking sustainability certification (target stocks, fishing method, gear type etc.) • Defines bycatch separate from retained catch (therefore may not account for all factors relevant to landed bycatch assessment) •

Concluding Remarks on Bycatch Assessment Criteria

There are several relevant elements from both criteria in developing acceptable bycatch criteria for California state-managed fisheries. Since these are only two of many existing criteria available, the features of these criteria may not encompass all that the state needs to consider in creating its criteria for acceptable bycatch. Important takeaways from this section are that both scientifically robust factors, as well as review of existing management strategies are valuable considerations for establishing (and eventually assessing and maintaining) acceptable levels of bycatch within state fisheries. It is also important to assess different metrics of bycatch including total levels of bycatch, bycatch rates, the effects of bycatch on various species, and the level of information available on bycatch. Also, it is important for the criteria to be simultaneously detailed (in specifying how acceptable level thresholds can be calculated and assessed), but also general enough to encompass the potential diversities of bycatch situations that may arise for any state fishery.

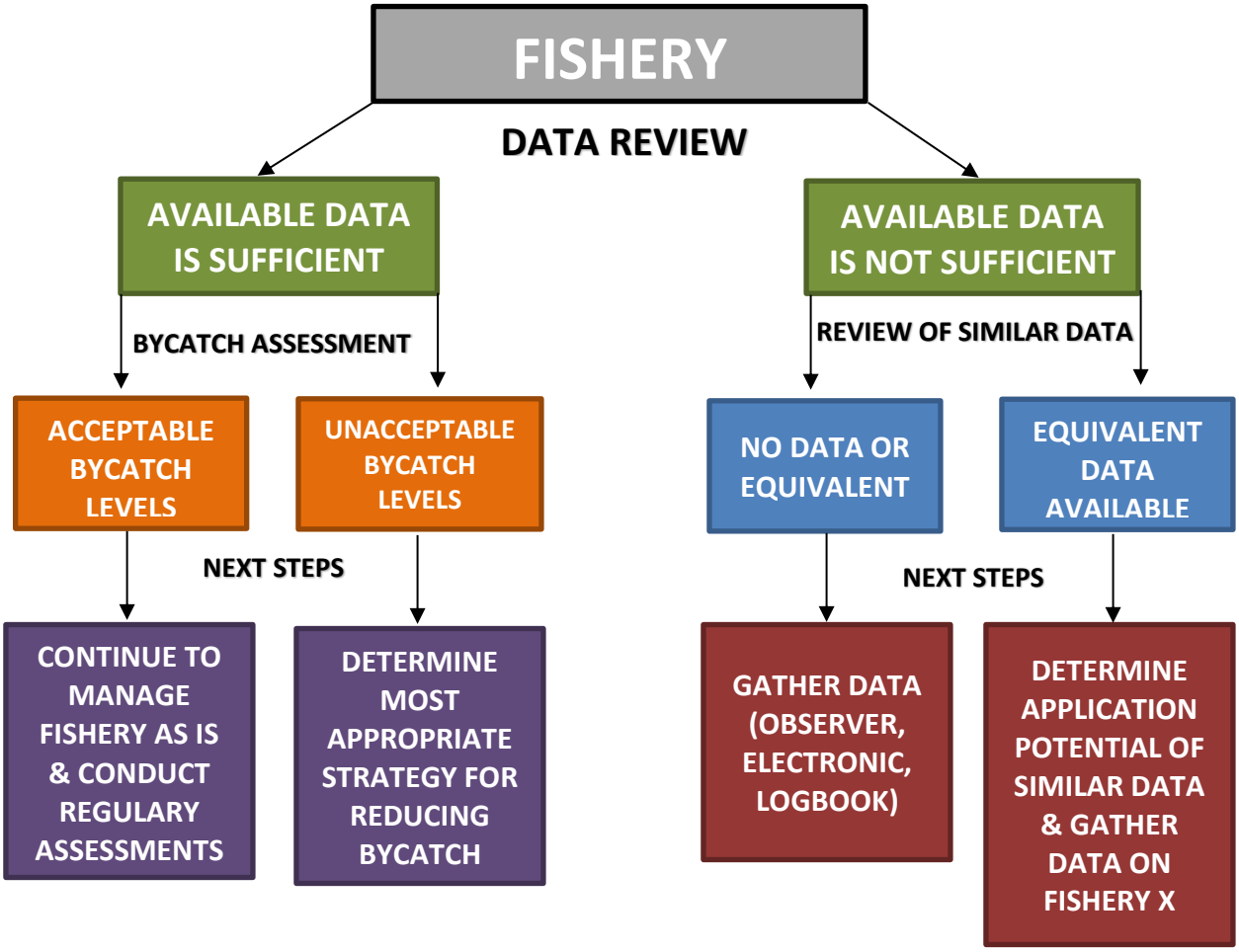
SECTION 2: STRATEGIES FOR ADDRESSING BYCATCH

2.1 Bycatch Reduction Techniques

Addressing bycatch concerns does not adhere to a "one size fits all" approach. Bycatch issues are subject to variation not only across fisheries, but within fisheries. This is due to the differences such as fishing location, gear type, fleet size, and environmental factors. Therefore it is very possible that a strategy that proves highly successful in one scenario can be useless, or even counterproductive, in another. One must also consider the viability of techniques given resource restraints (especially economic feasibility). In many cases, it is possible that a combination of techniques is necessary to efficiently address bycatch.

Example Flowchart

The availability of sufficient data is the core determining factor in assessing and addressing bycatch in a fishery. The flowchart below illustrates the hypothetical steps that may be taken to systematically approach a bycatch issue in Fishery X.



ADDITIONAL DATA COLLECTION	
APPLICABLE WHEN	• Insufficient available data on bycatch (data is old, infrequently collected, not detailed enough to perform assessment etc.)
EXAMPLES	• A compulsory requirement to record all discards in logbooks and that priority be given to assessing discard rates during routine inspection by fishery officers[18] • Electronic log books - real time reporting of catch composition- especially where Real Time Closures are considered[41] • Increased use of observers to help with discard monitoring[41] • Full retention requirements so catch composition can be assessed at the dock • Electronic/video monitoring
ADVANTAGES	• Provides crucial information on the current status and nature of existing bycatch issues • Fills data gaps • Specific, detailed data enables for effective management
CAVEATS	• Observers can be expensive • Electronic logbooks may require additional data collection by fishermen • Observer data not always accurate data due to the "observer effect" where fishermen alter their typical behavior, or underreport bycatch to yield more favorable recordings[19] ○ Would need substantial, if not 100%, observer coverage to control for this • Dockside market sampling contains little to no information on bycatch
CONCLUSION	Compulsory data collection is technically not a bycatch reduction technique in itself, but a necessary stepping stone in eventually identifying and subsequently addressing any discovered bycatch issues within a fishery.

[18] Marine Conservation Society (2009). Discards and Bycatch in fisheries: information sheet.
[19] Burns et al. (2008). Observer effect on fisher bycatch reports in the New Zealand ling bottom longlining fishery. NZ Journal of Marine and Freshwater Research.

UPGRADE GEAR TECHNOLOGY	
APPLICABLE WHEN	• Evidence of bycatch due to the employment of low-selectivity gear • Availability of gear that has evidence of higher selectivity
EXAMPLES	• Use and development of selective gear[20] • Monitoring and control of fishing gears[43]
ADVANTAGES	• Increased proportion of target species in catch • Fishery practices more sustainable • Less bycatch (and subsequently less bycatch mortality)

CAVEATS	• Economic consequences of introducing gear modification
	  ○ Transition process likely to result in reduced productivity
	  ○ Concern that more selective gear will encumber catch acquisition
	  ○ Selective gear may be more expensive than less selective gear
	  ▪ Therefore transitioning voluntary is a hard sell to fishermen

CONCLUSION	As this methodology puts the burden of implantation on fishermen, success of technique employment would increase if paired with incentives to make economically feasible or management strategies (monitoring/controlling gear types)

[20] Marine Conservation Society (2009). Discards and Bycatch in fisheries: information sheet.

TIME-AREA MANAGEMENT	
APPLICABLE WHEN	• Good data available indicating where bycatch hotspots are
EXAMPLES	• Area closures - Real time closures[21]
ADVANTAGES	• Promotes sustainability: protect juvenile and spawning fish[44] • Protects ecosystem and habitat
CAVEATS	• Communication and enforcement of boundary restrictions is essential • Reduces bycatch by avoidance rather than modifying fishing behavior: potentially not practicable • Could result in more concentrated fishery activity in another area, must account for sustainable practicality of this measure when prohibiting areas
CONCLUSION	Time-area management needs to be consistently and strongly enforced to be effective (i.e. monitoring, fines)

QUOTAS AND HARD CAPS	
APPLICABLE WHEN	• An upper limit on bycatch is desired
EXAMPLES	• Multiple-species quota arrangements for mixed demersal fisheries[22] • Establish bycatch caps in all fisheries[23] • Several countries, such as Norway, have set a "discard ban package" to reduce fishing exploitation[24]
ADVANTAGES	• Shifts accountability onto fisherman to regulate bycatch • Motivates development of technologies and practices
CAVEATS	• In countries, such as New Zealand, discard dumping is made illegal, it still occurs[25] • Caps contingent on having accurate bycatch information
CONCLUSION	Recommended to safeguard caps • i.e. Pair (caps) with other reduction technique • Provide a margin of error by making caps more robust

[21] Marine Conservation Society (2009). Discards and Bycatch in fisheries: information sheet
[22] Marine Conservation Society (2009). Discards and Bycatch in fisheries: information sheet
[23] Keledjian et al., (March 2014). Wasted Catch: Unsolved Problems In U.S. Fisheries. Page 16.
[24] Gullestad, P. (2013). The "Discard Ban Package" – Norwegian experiences in efforts to improve fisheries exploitation patterns. Norwegian Directorate of Fisheries report.
[25] FAO: Fishery Industries Division (1997). A study of the options for utilization of bycatch and discards from marine capture fisheries. Section 11.1.4

INCENTIVE AND UTILIZATION PROGRAMS	
APPLICABLE WHEN	• More target catch can be harvested before a fishery is closed for exceeding bycatch limits • Funds are available to compensate financial incentive efforts • There is a desire to promote transition to cleaner gear types
EXAMPLES	• Taxes imposed on discards based on the estimated value of the entire catch (including discards)[26] • Iceland has operated a "bycatch bank" to assist in commercializing unwanted fish[27] • License and fee discounts for the use of bycatch reduction devices[49]
ADVANTAGES	• Provides support and encouragement for adapting to more sustainable fishery measures
CAVEATS	• It must be ensured that the profit from selling discards does not go back to the fishermen[28] ○ It is essential that fish which are landed but would normally be discarded (because they are undersized) do not enter the market, but rather are used for fishmeal, for example[50] • Placing monetary value on discards raises theoretical problems of valuation of natural resources (an inevitably subjective process, as no objective valuation framework exists)[50]
CONCLUSION	Incentive and utilization programs are an especially valuable technique as it can relieve the burden of reduction on fishermen by providing support in conjunction with mandates.

[26] FAO Technical Paper 470 (2005). Discards in the worlds marine fisheries: An update. Section 4.6.3
[27] Fisheries in Iceland. Policy Department B: Structural and Cohesion Policies (2008). Page 18.
[28] Marine Conservation Society (2009). Discards and Bycatch in fisheries: information sheet.

MARKET INCENTIVES	
APPLICABLE WHEN	• Outreach to consumer base is possible and practicable • Consumer knowledge and communication regarding seafood is substandard
EXAMPLES	• Encourage consumers to choose sustainable alternatives, relieving demand for less sustainable seafood options[29] • Eco-labelling – environmental performance certification used around the world, indicates to consumer environmental quality of product[30] ○ Credited as contributing factor in global bycatch reduction[31]
ADVANTAGES	• Puts responsibility on consumer to be cognizant of the large scale repercussions of purchase choices • If consumers refuse unsustainable products, fisheries will be forced to accommodate market interests
CAVEATS	• Cannot quantify the degree to which public awareness will contribute to achieving bycatch reduction targets • Cannot control or estimate the degree in which consumers care about the impacts of their purchases, therefore a volatile strategy for reducing bycatch
CONCLUSION	This is a method that could hypothetically be practicable for all seafood commodities, as it expands the contexts of bycatch and can speak to consumer awareness of product sustainability as a whole.

[29] Marine Conservation Society (2009). Discards and Bycatch in fisheries: information sheet.
[30] Global Ecolabelling Network (GEN) (2004). Information paper: Introduction to ecolabelling
[31] FAO Fisheries Technical Paper 470 (2005). Discards in the worlds marine fisheries: An update. Section 4.2.2

APPENDIX 1: Seafood Watch Methodology for Wild Capture Fisheries

Seafood Watch assesses the sustainability of fisheries for the purpose of providing recommendations to consumers and businesses on the selection of sustainable seafood. Seafood Watch considers the following 4 criteria in assessing the sustainability of a fishery, of which Criterion 2 has direct relevance to bycatch assessment as it considers the impacts of a fishery on other "non-target" species:

Criterion 1	Criterion 2	Criterion 3	Criterion 4
Impacts on the Species Under Assessment	**Impacts on Other Species**	**Management Effectiveness**	**Impacts on the Habitat and Ecosystem**
• Inherent vulnerability • Abundance • Fishing Mortality	• **Inherent vulnerability** • **Abundance** • **Fishing Mortality** • **Modifying Factor: Discards and Bait Use**	• Harvest strategy • Bycatch management strategy	• Impacts of Fishing Gear on the Habitat and Substrate • Modifying Factor: Mitigation of Gear Impacts • Ecosystem–based Fisheries Management

Criterion 2 Guiding Principles[32]

1. **The fishery minimizes bycatch**
   Bycatch includes:
   - Discards, endangered or threatened species catch, pre-catch mortality and ghost fishing[33]
   - All discards, including those released alive, are considered bycatch unless there is valid scientific evidence of high post-release survival and there is no documented evidence of negative impacts at the population level

2. **Fishing mortality does not threaten the populations or impede the ecological role of any marine life**
   Fishing mortality should be appropriate given each impacted species abundance and productivity, accounting for scientific uncertainty, management uncertainty and non-fishery impacts such as habitat degradation

Steps for Assessment Methodology

Seafood Watch's assessment procedure is prefaced by a determination of existing main bycatch species. Subsequently, it considers four assessment factors prior to determining the final score for Criterion 2.

1. *Determining main species for assessment*
2. *Perform Assessment*

[32] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 8

[33] "Ghost fishing occurs when lost or discarded fishing gear that is no longer under a fisherman's control continues to trap and kill fish, crustaceans, marine mammals, sea turtles and sea birds." Definition provided by: NOAA (2015). What We Know about "Ghost Fishing".

- *Factor 2.1 – Inherent Vulnerability*
- *Factor 2.2 – Abundance*
- *Factor 2.3 – Fishing Mortality*
- *Factor 2.4 – Modification Factor: Discards and Bait Use*

3. *Final Scoring*

Preliminary Step – Determine Main Species for Assessment[34]

OBJECTIVE	
Determine the main species of bycatch. Subsequently main species are subject to assessment procedure	
QUALIFICATIONS	
Any of the following scenarios would be considered a main species	
SCENARIO 1	Species catch is more than 5% of fishery's catch
SCENARIO 2	Species catch is more than 1% of fishery's catch AND Causes more than 5% of the species' total mortality across all fisheries
SCENARIO 3	Species catch is less than 1% of fishery's catch AND Causes more than 20% of species' total mortality across all fisheries
SCENARIO 4	Species is overfished, depleted, a stock concern, endangered, threatened, IUCN Near Threatened, US MMPA strategic species and/or subject to overfishing and the fishery causes more than 1% of the species' total mortality across all fisheries
If there are no other "main species" (based on the above guidance) besides the one considered the main/target stock (assessed under criterion 1), but the total catch of other discarded and retained species is more than 5%, assess the top 3 species by volume of catch.	

Factor 2.1 – Inherent Vulnerability

GOAL	
Ensure fishing mortality and other management measures are appropriate for the inherent vulnerability of all bycatch stock(s).	
PROCEDURE OUTLINE	
For when bycatch species is known:	
Utilizes FishBase Vulnerability Scores Where available, Seafood Watch uses	***Species without FishBase data*** Seafood Watch provides a comprehensive

[34] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 8

FishBase[35] "vulnerability" scores to assign a score for inherent vulnerability of the stock.	scoring procedure to assess species' vulnerability, considering relevant factors such as life span, reproductive potential (see table below)
For when bycatch species is unknown:	
For fisheries for which the species for bycatch are unknown, bycatch impacts by gear type is used to determine the likelihood for a non-target species to interact with the gear. Gear impact studies provide guidance on interaction likelihood. Detailed guidelines provided in Appendix 3.[36]	

Step 1 of procedure Seafood Watch utilizes for determining inherent vulnerability for species without available FishBase data.[37]

Resilience attribute	Fish			Invertebrates		
	Score = 1	Score = 2	Score = 3	Score = 1	Score = 2	Score = 3
Average age at maturity	> 15 yrs	5–15 yrs	< 5 yrs	>15 yrs	5–15 yrs	< 5 yrs
Average maximum age	> 25 yrs	10–25 yrs	< 10 yrs	> 25 yrs	10–25 yrs	< 10 yrs
Fecundity	< 100 eggs/ yr	N/A	N/A	< 100 eggs/ yr	NA	NA
Average maximum size	> 300 cm	100–300 cm	< 100 cm	N/A	N/A	N/A
Average size at maturity	> 200 cm	40—200 cm	< 40 cm	N/A	N/A	N/A
Reproductive strategy	Live bearer	Demersal egg layer	Broadcast spawner	Live bearer	Demersal egg layer or brooder	Broadcast spawner
Trophic Level	>3.25	2.75-3.25	<2.75	N/A	N/A	N/A
Density dependence	N/A	N/A	N/A	Depensatory dynamics at low population sizes (Allee effects) demonstrated or likely	No depensatory or compensatory dynamics demonstrated or likely	Compensatory dynamics at low population sizes demonstrated or likely

Factor 2.2 – Abundance[38]

GOAL

Stock abundance and size structure of all main bycatch species/stocks is maintained at a level that does not impair recruitment or productivity

PROCEDURE OUTLINE

Interpret the health of stocks, using the most conservative relevant tier (using table below)
I.e. a species that is both overfished and endangered is classified as "endangered"

[35] FishBase is an international data resource featuring best available data on fish species. Site: www.fishbase.org
[36] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 48.
[37] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 4.
[38] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 5.

For ***species with unknown*** stock data, unknowns are based on type of fishing gear used and likelihood data for species interaction (detailed guidelines provided in Appendix 3[39]). Use appendix 3, unknown bycatch matrix, and additional bycatch guidance

Assessment scheme for Abundance (Example from Procedure)[40]

CONSERVATION CONCERN	DESCRIPTION
VERY LOW	• Biomass estimated to be above or fluctuating around appropriate target reference point (and no controversy around that estimate) OR • Species near historic high/virgin biomass OR • Non-native species
LOW	• Stock classified as not overfished, but stock assessment is lacking OR • Biomass above limit, but below target OR • Biomass above limit reference, but estimated to be above target reference (but with significant uncertainty, i.e. widely varied data results, scientific controversy)
MODERATE	No evidence stock is either below or above reference points
HIGH	• Stock is listed by management body as overfished/depleted OR • Stock is species of concern under management body
VERY HIGH	State, national, or international scientific body labels as endangered or threatened

Depletion Thresholds: Very Low to Moderate = Not Depleted (Green),
High to Very High = Depleted (Red)

Factor 2.3 – Fishing Mortality[41]

GOAL
Fishing mortality is appropriate for the current state of all main bycatch species/stocks
PROCEDURE OUTLINE
Utilizes fishing mortality/exploitation rate
Rule of thumb: Err on side of caution when there is uncertainty in determining whether a fishery is a substantial contributor and/or whether a fishery is at or below a sustainable level
For unknown species: Utilize Appendix 3[42], featuring overview and guidelines based on studies correlating gear type and likelihood for certain species being caught incidentally. Emphasizes to only use Appendix ONLY as a general guide to help rate bycatch potential.

[39] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 48

[40] NOTE: Table is based on current abundance or biomass metrics, not on fishing mortality. In this context, "overfished" means that the biomass is below a threshold, not that overfishing is occurring.

[41] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 6.

CONSERVATION CONCERN	FISHERY DEEMED SUBSTANTIAL CONTRIBUTOR TO MORTALITY	FISHERY CONTRIBUTION TO MORTALITY IS LOW OR UNKNOWN
VERY LOW	• Non-native species OR • Large portion of population protected AND not depleted OR • Highly likely that fishing mortality is at or below a sustainable level, allowing for population to maintain current level or rebuilt if depleted	• Fishery's contribution to mortality is negligible OR • Meets definition of very low in in left column
LOW	• Probable (>50% chance) fishing mortality is at or below sustainable level allowing population stasis or growth, some uncertainty OR • Pop trends increasing in short and long term due to management	• Contribution is not negligible, but does not adversely affect population OR • Contribution is unknown, but population is not depleted OR • Meets low concern in left column
MODERATE	• Fishing mortality fluctuating around maximum sustainable yield OR • Fishing mortality unknown, but for any depleted populations, effective management is in place	Fishery contribution is unknown, but population may be depleted (and if so, management in place) or susceptibility to fishery is moderate to high
HIGH	• Overfishing occurring, fishing pressure may be too high to allow species to maintain abundance/recover, but depleted populations have management that is reasonably expected to curtail fishing (ensure doesn't achieve critical rating below) OR • Fishing mortality is unknown and no effective management in place	Fishery contribution is unknown, but population is depleted and no reasonable management to curtail overfishing is in place
CRITICAL	• Overfishing is occurring/cumulative fishing pressure may be too high to allow species to maintain abundance/recover AND reasonable management is not in place	

Factor 2.4 – Modifying Factor: Discard and Bait Use[43]

GOAL

Fishery optimizes the utilization of marine resources by minimizing post-harvest loss and by efficiently using marine resources as bait

PROCEDURE OUTLINE

The collective scoring for Factors 2.1 – 2.3 are penalized based on magnitude of waste of marine resources. The results of this Factor determine the final score for Principle 2. Seafood Watch emphasizing the efficiency of bait use simultaneously with the minimization of waste via discarded catch. In this factor, discard mortality factor is assumed to be 100%.

EQUATION

[42] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 48
[43] Seafood Watch Criteria for Wild-Capture Fisheries (March 31, 2014). Page 12.

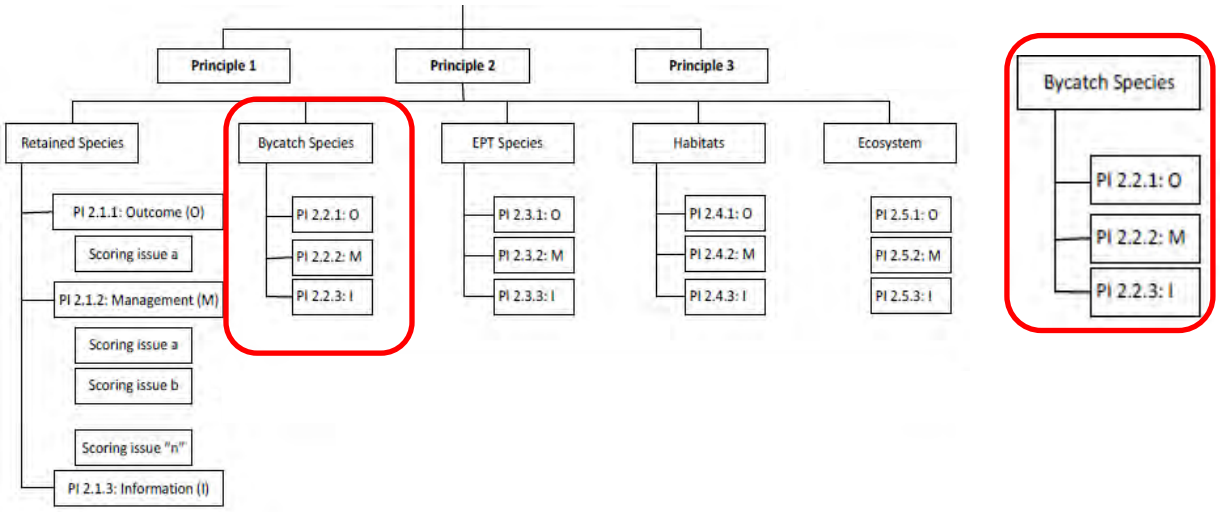
Discard and bait use rate are defined as $\frac{discards+bait\ use}{landings}$
UNITS
Metrics to use for calculation: either biomass or numbers. • Instructions indicate to use whichever metric is numerically higher

DISCARD + BAIT USE OVER LANDINGS RATE	DEDUCTION USED TO CALCULATE FINAL CRITERION 2 SCORE
Less than 20%	No deduction
20 – 40%	5% deduction
40 – 60%	10% deduction
60 – 80%	15% deduction
80 – 100%	20% deduction
More than 100%	25% deduction

APPENDIX 2: Marine Stewardship Council Fisheries Certification Requirements and Guidance

The Marine Stewardship Council (MSC) has an ecolabel and fishery certification program, which serves to promote health of world oceans in recognizing and applauding sustainable fishery practices. This contributes to a greater mission in positively influencing choices made in seafood purchases and facilitating collaborations in progressing towards a sustainable seafood market. MSC has intricate criteria for its ecolabel and fishery certification program (outlined in the flowchart below) that hold valuable insights that are worthy considerations in the future goal of clarifying acceptable levels of bycatch criteria for California policy.

MSC Principles & Criteria for Sustainable Fishing (MSC Standard)[44]



The above figure is merely provided to indicate the scope of considerations the MSC Certification considers. Only Bycatch Species (encircled in red) criteria are discussed here.

Principle 2: Environmental impact of fishing

Principle 2 Mission Statement[45]

Fishing operations should allow for the maintenance of the structure, productivity, function and diversity of the ecosystem (including habitat and associated dependent and ecologically related species) on which the fishery depends.

This principle considers encompasses many factors aside from bycatch (i.e. habitat ecosystem, ETP species and primary species), but for the following overview will only focus on the requirements for Bycatch species.

[44] MSC Fisheries Certification Requirements and Guidance (October 2014). Page 377.
[45] MSC Fisheries Certification Requirements and Guidance (October 2014). Page 7.

Assessment Procedure for Bycatch Species

The assessment procedure for bycatch species considers three major factors.

- Bycatch Species Performance Indicators (PI)
  - PI 2.2.1 – Secondary Species Outcomes
  - PI 2.2.2 – Secondary Species Management Strategy
  - PI 2.2.3 – Secondary Species Information

PI.2.2.1 Secondary Species Outcomes[46]

OUTCOME STATUS: The unit of assessment[47] aims to maintain secondary species above a biologically based limit and does not hinder recovery of secondary species if they are below a biologically based limit

ASSESSMENT COMPONENTS

- Main secondary stock status[48]
- Minor secondary species stock status

MINIMAL REQUIREMENTS	HIGHER SCORES REWARDED WHEN:
Biologically based limits • Main secondary species is likely above its biological limits • If below biologically based limits, measures at least need to be in place to ensure that there is not a hindrance in recovery and rebuilding	*Greater data confidence* • Main secondary species is "highly likely" or has a "high degree of certainty" of being above biological limits *Management robustness* • Measures in place with evidence of recovery or demonstrably effective partial strategy in place (For species below biological limits) *Consideration of minor secondary species* • Minor secondary species are highly likely to be above biologically based limits • Evidence that unit of assessment for certification does not hinder recovery and rebuilding of minor secondary species

PI.2.2.2 Secondary Species Management Strategy[49]

[46] MSC Fisheries Certification Requirements and Guidance (October 2014). Page 142.

[47] Unit of assessment varies based on what is being assessed in a given certification process. Could refer to: target stock, fishing method, gear type, and/or practices, fishing fleets/groups of vessels, or individual fishing operations pursuing stock, and any other eligible fishermen. Unit of assessment defined in MSC Fisheries Certification Requirements and Guidance (October 2014). Page 25.

[48] Main species is defined by catches at 10% or more than the total catch by weight of the unit of assessment. MSC Fisheries Certification Requirements and Guidance (October 2014). Page 89.

Management strategy: There is a strategy in place for managing secondary species that is designed to maintain or to not hinder rebuilding of secondary species; and the unit of assessment[50] regularly reviews and implements measures, as appropriate, to minimize the mortality of unwanted catch	
ASSESSMENT COMPONENTS	
• Management strategy in place • Management strategy evaluation • Management strategy implementation • Shark finning • Review of alternative measures to minimize mortality of unwanted catch	
MINIMAL REQUIREMENTS	**HIGHER SCHORES REWARDED WHEN:**
Management Strategy • Measures in place (if necessary) to maintain acceptable limits, or not hinder rebuilding of main secondary species to levels above biologically based limits • Measures are considered likely to work	*Management robustness, confidence, and implementation* • Partial or full strategy in place to rebuild or maintain main secondary species[51] above biological based limit levels • Objective basis for confidence, or high confidence, that partial/full strategy will work • Some/clear evidence that partial/full strategy is implemented successfully • Evidence of achieving overall objective
No Shark Finning Likely that shark finning is not taking place	*Higher Confidence in No Shark Finning* • Highly likely/high degree of certainty that shark finning is not taking place
Consideration of alternative measures • There is a review of potential effectiveness and practicality of alternative measures to minimize mortality of unwanted catch of main secondary species	*Review frequency* • There is regular/biennial review of potential effectiveness and practicality of alternative measures to minimize mortality of unwanted catch of main secondary species • Review is implemented as appropriate

P1.2.2.3 Secondary Species Information[52]

Information on the nature and amount of secondary species taken is adequate to determine the risk posed by the unit of assessment[53] and the effectiveness of the strategy to manage

[49] MSC Fisheries Certification Requirements and Guidance (October 2014). Page 144.

[50] Unit of assessment varies based on what is being assessed in a given certification process. Could include: target stock, fishing method, gear type, and/or practices, fishing fleets/groups of vessels, or individual fishing operations pursuing stock, and any other eligible fishermen. Unit of assessment defined in MSC Fisheries Certification Requirements and Guidance (October 2014). Page 25.

[51] Main species is defined by catches at 10% or more than the total catch by weight of the unit of assessment. MSC (October 2014). Page 89.

[52] MSC Fisheries Certification Requirements and Guidance (October 2014). Page 146.

secondary species	
ASSESSMENT COMPONENT	
• Information adequacy for assessment of impact on main secondary species[54] • Information adequacy for assessment of impacts on minor secondary species • Information adequacy for management strategy	
MINIMAL REQUIREMENTS	**HIGHER SCORES REWARDED WHEN:**
Impact estimations • Qualification information is adequate to estimate the impact of the unit of assessment on secondary species status *Management Strategy* • Adequate information to support measures to manage secondary species	*Greater data confidence* • Quantitative information is available and adequate to assess with a high degree of certainty the impact of the unit of assessment on secondary species *Management Robustness* • Information is adequate to support a partial or full strategy to manage main/all secondary species • Evaluations with high degree of certainty of achieving management objective *Consideration of minor species* • Some quantitative information is adequate to estimate the impact of the unit of assessment on secondary species with respect to status

[53] Unit of assessment varies based on what is being assessed in a given certification process. Could refer to: target stock, fishing method, gear type, and/or practices, fishing fleets/groups of vessels, or individual fishing operations pursuing stock, and any other eligible fishermen. Unit of assessment defined in MSC Fisheries Certification Requirements and Guidance (October 2014). Page 25.

[54] Main species is defined by catches at 10% or more than the total catch by weight of the unit of assessment. MSC Fisheries Certification Requirements and Guidance (October 2014). Page 89.

Santa Monica Bay
Pier Stakeholders Summit
May 7th, 2015

Welcome and Introductions by Fish & Game Commission and Heal the Bay

30+ attendees of stakeholder group include municipalities, pier fishing community, state agencies, academics, NGOs, sport fishing community, lifeguards, surfers, aquaria, and public safety. Main reason meeting – July 5th, 2014 white shark hooked, agitated, swimmer bit, public safety issue, MB closed, and conflict between users. Santa Monica Bay beach cities and stakeholders concerned about potential conflicts between anglers, swimmers, surfers, ocean wildlife (sharks, sea lions). How do we prevent something like that happening again, without piers closing?

Objectives:

1. **Share education and knowledge of fishing, wildlife, and ocean recreation conflicts**
2. **Research and gather anecdotal information on how each pier is used**
3. **Review existing pier management documents/existing regulations**
4. **Develop pier management plans/joint management plan for the Bay**
5. **Create a report of pier management strategy to present at FGC**

1. Informational Items

a. Presentation: Frankie Oralla – Heal the Bay – Shark Ambassador Program

Following the shark bite incident in Manhattan Beach in 2014 and subsequent closing of the MB Pier, Heal the Bay decided to build upon existing Pier Angler Outreach Program, by creating a pilot Shark Ambassador Program to educate pier anglers of Santa Monica Bay about local shark populations and sustainable fishing techniques. Program partners and funders of the pilot project stepped up, including the City of Manhattan Beach, City of Santa Monica, County of Los Angeles, City of Hermosa Beach, and the City of Redondo Beach. In the fall of 2014, Heal the Bay staff trained as "Shark Ambassadors" approached anglers to educate fishermen and collect survey information. Through outreach to over 700 anglers, outreach included distributing educational materials focused on responsible fishing techniques, how to avoid catching large sharks and what to do if a shark is caught. Through survey questions to anglers, Heal the Bay also collected information on demographics, targeted species, caught species and other recreational activities at all Santa Monica Bay piers. Besides fishing, the study also looked at other recreational activities that occur near the piers. According to the research, Manhattan, Hermosa and Venice piers all have a high potential for interaction among anglers, surfers and swimmers. A report of the findings can be found here: http://www.healthebay.org/blogs-news/angling-solution-shark-fishing-piers

b. Presentation: Dr. Chris Lowe – Cal State Long Beach Shark Lab - Sharks of Santa Monica Bay

Santa Monica Bay is unique with nearshore sandy habitat, rocky reef habitat, and as sharks make migratory paths they will pass by sandy beach habitats. Seasonal migrating sharks are caught off local piers. White sharks – typically pups that we are seeing nearshore – are usually found just outside the surf break; sub-adult and adult typically offshore islands. Mako and salmon sharks easily mistaken for white sharks. White sharks, mako, thresher, salmon, and blues use the southern California Bight – primary nursery that ranges from oceanic to coastal areas. Populations are recovering with fisheries management and more people are using the ocean. These sharks are highly vulnerable to overfishing – life history characteristics similar to humans. CA passed protection of white sharks in 1994; and near shore gill net ban same year. Satellite tagging gives snapshots of what is going on-acoustic receivers show a high number at Will Rogers State Beach, Manhattan Beach Pier increased (shifted from Malibu). Return of the predators has taken decades - better water quality and fisheries management has allowed for ecosystem recovery. Now we need to get used to sharing ocean with large predators – public not used to large predators over the last 2-3 decades. Is it safe? Attacks in Southern California are extremely rare - more people in water but number of attacks not going up. Big adult predatory sharks avoid most populated area. Juvenile white sharks use our coastal beaches and need to make sure that continues by not chasing or harassing sharks. Best tool

is education, population (human and shark) is going to increase, so we have to be smart and share the water. https://www.csulb.edu/explore/shark-lab

2. Stakeholder discussion: Issues identified at piers

- **a.** Shared issues: Getting regulations to pier anglers is a challenge; Gear size/line type- debate on monofilament VS steel; Swimming/surfing around piers; Treble hooks; Snagging
- **b.** Malibu Pier: Concerned about fishing activities attracting birds and reducing water quality
- **c.** Santa Monica Pier: Concerned about fishing activities attracting birds and reducing water quality; No chopping bait on SM Pier
- **d.** Redondo Pier: No swimming, surfing in the U-shaped part and within 25 yards of the pier; Fishing and ocean recreational use not a problem; 24 hours a day, the pier is open. Pier jumping at night is an issue. Lobster snagging at night
- **e.** Manhattan Beach Pier: Group of 20-30 people causing the problems at night; Police and fishermen not totally clear on regulations and causing arguments; Police officer and fisherman made sheet with CDFW codes, laminated it, and handed out to officers and fishermen; Crux of conflict between ocean swimmers/surfers and pier anglers targeting sharks
- **f.** Hermosa Pier: Fishing-related litter; No overhead casting; 200 foot buffer around pier – swimming and surfing; No bicycles, animals, smoking – these regulations have more violations than fishing; Fishing – issue of deliberate fishing for sharks and how to address that. Safety-risk. Don't want to see that happening in Hermosa. Concerns with steel, heavy lines- what are our options there? Hermosa decision-makers would like to see some regulations around monofilament vs steel. No steel leaders on the pier.

3. Stakeholder discussion: Ideas/Solutions proposed by stakeholders

- **a.** Better education handouts on piers → forming a committee
- **b.** Cal-tip on pier signs
- **c.** Building a support-system on the piers/relationship-building/stewards/docents to relay info.
- **d.** Pier-buck, angler-to-angler giving positive reinforcement
- **e.** Compile pier use data: Maria/Redondo Sea Lab, Shark Ambassador Program, FCEC surveys, Rec Fin
- **f.** Line cutters
- **g.** Restricting steel leaders at MB and HB Piers
- **h.** What about some common sense best practices that we can agree on? Not saying new regulations or policies- more about what the best thing to do in certain scenarios would be.

4. Other Topics/Comments:

- **a.** Can swimmers be kept out of water around pier when a shark is sighted? Clarifying swimming/surfing around piers, Dan Murphy/ LA Co Fire and Lifeguards: Constitutional right to swim in the waters, unless there is a safety risk. County Code 17.12.480 Sailboards, kite boards, surfboards, paddleboards, ocean kayaks, surf skis, rigid hull surf-craft, and similar objects—Use Restrictions: G. No person shall swim, surf, skin dive, scuba dive, or otherwise recreate in the Pacific Ocean within 100 feet of any pier. This code would apply at county beaches, so it does not apply at Malibu, Santa Monica, Venice or Hermosa Beach but could be enforced at Manhattan and Redondo. Generally, this is the case in Redondo. It is enforced there but doesn't really impact the fishing community because the fishing isn't done near the sandy beach on the south side that is used by beachgoers. At Manhattan Beach, swimming is prohibited on the south side and we keep them about 300 feet away from the pier (if they enter from the sand). We don't chase after swimmers who are off shore and rounding the end of the pier. On the North side, we will set up flags dependent on the current to keep swimmers away from the pilings. Thirty yards is pretty typical, but again, we don't chase down the people coming around the pier. The area of contention regards surfers. We do not actively pursue surfers who get close to the pier unless they demonstrate a lack of skill that puts them at risk.
- **b.** Aquarium/Ocean User Rep: We need to change as nature changes. Monofilament vs steel lines/leaders. Steel leaders keep a shark on the line- let's revisit those on MB and HB.

- **c.** Pier Fishing Rep: If you want to change the fishing regulations in the area due to sharks, then you need to change the ocean recreation allowed too.
- **d.** How can we dissuade anglers from targeting white sharks? It is illegal to target white sharks.
- **e.** What about thinking about things seasonally? Example: swimmers in the water between Manhattan and Hermosa in June-July or Seasonality of sharks- certain times of year where steel leaders shouldn't be in the water?
- **f.** Keep in mind local traditions and customs to create a way we can get along and share the water.
- **g.** This is a work in progress, we are just starting to meet. You can tell other stakeholders that we're working on it, and they can speak up with solutions and ideas.
- **h.** Best practices for ethical fishing around white sharks includes: No steel leaders, Cut leader as close to mouth as possible- but hard to do on piers, Use "line cutter" (tied to a rope, drop it down the line, swirl it around and cut the line)
- **i.** Can there be a compromise for a couple specific piers (MB and HB) and look at not using steel leaders there? How do the fishing stakeholders feel about this?
    - i. Want to see consistency with pier regulations up and down the state
    - ii. Can you outlaw targeting big game on piers? Don't want to see eliminating a way to catch legal big game b/c we want to reduce chance of catching illegal fish

5. Looking Forward:

- **a.** Form Education Materials & Outreach Group: Linda Chilton (USC Sea Grant), Ryan Denton (CDFW), Tom Raftican (Sport fishing Conservancy), Eric Martin (Roundhouse Aquarium on MB Pier), Rebecca Hartman (CDFW enforcement), Frankie Orrala (Heal the Bay), Sonke Mastrup (FGC)
- **b.** Issues: people (both anglers and police) not knowing fishing regs, undersize, contamination
- **c.** Outreach Materials: need outreach materials that are multi-lingual, waterproof, streamlined/simple, common species and limits, ruler, species photos, cal-tip info. What already exists? Do we want SM Bay-wide? Do we want each pier-specific?
- **d.** Share notes from meeting.
- **e.** Start creating report based on communications at this meeting, BMPs on pier use, fishing, etc.
- **f.** FGC sending letter to all pier management municipalities with state regulations.