

Director's Herring Advisory Committee (DHAC), and from interested fishermen and individuals at public meetings. The proposed amendments to Sections 163 and 164, Title 14, California Code of Regulations (CCR), reflect Department of Fish and Game (Department) recommendations presented to the DHAC and recommendations from the DHAC. The Department prepared a Supplemental Environmental Document, pursuant to the requirements of the California Environmental Quality Act. This Environmental Document will be released for public review in mid-June 2009. Certification of the Environmental Document is scheduled to occur at the September 3, 2009 Commission meeting at a location to be announced.

BACKGROUND

Pacific herring gill-net fisheries occur in four primary spawning areas of San Francisco Bay, Tomales Bay, Humboldt Bay, and Crescent City Harbor. The Department manages these populations as separate stocks. The commercial herring fisheries on these stocks are closely regulated through a catch quota system to provide for adequate protection and utilization of the herring resource. The Department conducts annual assessments of the size of the spawning populations of herring (spawning biomass) in San Francisco Bay. In addition to the assessment of spawning biomass, the Department examines the age structure of the spawning population, growth and general condition, biological aspects of the catch, and environmental conditions. These data serve as the basis for establishing fishing quotas for the next season.

The Pacific Ocean fishery for herring in California occurs during the non-spawning season primarily in the waters of Monterey Bay. It is unknown whether this population is a mixed stock of Pacific herring from Tomales Bay and San Francisco Bay. Currently the Department does not conduct biological assessments or set quotas for this fishery. The total amount of fishing effort is not controlled other than stipulating that herring taken in open ocean waters may not be used for herring roe purposes.

A fresh fish Pacific herring fishery is also permitted during the non-spawning season in Tomales Bay and San Francisco Bay. This fishery is regulated through annual assessments conducted by the Department as with the gill-net fishery mentioned above. Annual quotas for these fisheries are set in conjunction with gill-net fisheries for Tomales and San Francisco Bay.

FISHING QUOTAS

Annual fishing quotas are intended to provide for a sustainable fishery and have been limited to a total commercial catch of not to exceed 20 percent (harvest percentage) of the spawning biomass, based upon the results of a peer reviewed model that assumes a stable environmental and biological

conditions. Quotas are the principal regulatory tool to establish adequate protection for the herring resource and provide for the long-term yield of the fishery. Each year, the Department recommends a harvest percentage that is not determined by a fixed mathematical formula; rather, the recommendation is based upon the modeling results and takes into account additional data collected each season, such as oceanic conditions, growth rates of herring, strength of individual year-classes, and predicted size of incoming year-classes (*i.e.*, recruitment). In response to poor recruitment, or indication of population stress, and/or unfavorable oceanographic conditions, harvest percentages in previous years have been set below 15 percent. For example, a near record low spawning biomass was estimated for both the 2006-2007 and 2007-2008 seasons; therefore, a conservative harvest percentage of 10 percent was recommended for those two seasons.

Within the overall quota for San Francisco Bay, separate quotas are established for each gill net platoon (*i.e.*, December “DH”, Odd, and Even fishing groups). The overall quota is divided among the three platoons in proportion to the number of permits assigned to each platoon. Slight annual adjustments in the quota assignments for each fishing group are needed to account for attrition of permittees and the use of herring permits in the herring eggs on kelp (HEOK) fishery. HEOK fishing occurs only in San Francisco Bay and the fishery is regulated under Section 164, Title 14, CCR. Individual HEOK quotas depend on the total herring fishery quota for San Francisco Bay established by the Commission under Section 163, Title 14, CCR. In 1994, the Commission provided HEOK permittees possessing “CH” permits with a HEOK quota equal to approximately 0.79 percent of the overall quota.

San Francisco Bay

The spawning biomass estimate for the 2008-2009 season was 4,844 tons, well below the historical average (1978-1979 season to present) of 49,428 tons. The estimate was a 57 percent decrease from the 2007-2008 season estimate of 11,183 tons. Despite improved oceanic conditions reported for 2008, the spawning population exhibited further decline to a new historical low. Unfavorable biological and environmental conditions are likely causes which continue to hinder the San Francisco Bay stock recovery.

The estimated number of age four and older herring which had historically supported the gill net fishery declined in the population after the 1997-1998 El Niño. Since the 2002-2003 season, the Department has expressed concern regarding the health, specifically the age structure, of the San Francisco Bay herring population. The estimated numbers of herring, based upon preliminary age data, for the past season indicate a decline from the previous season in all age classes with the exception of 2-year old fish. The number of herring in each age class is well below average, with historic low numbers of age three, four, and five year olds

(year classes 2005-2006, 2004-2005, and 2003-2004, respectively). Based on the strength of year classes in the San Francisco population, the outlook for the fishery is poor. In order to ensure the sustainability of this stock, conservation of the remaining biomass will be important to rebuild the herring population.

One of the Department's herring fishery management goals is to allow the harvest of age four and older herring and to avoid the harvest of 2- and 3-year old fish, many of which are first-time spawners. Preliminary commercial age data indicates that there was an increased take of 2- and 3-year old herring by approximately six percent from the previous season. The Department remains concerned with a coast-wide trend in decreasing mean length at age, and a truncation in age-classes reported for herring fisheries along the entire Pacific coast since the 1997-98 El Niño.

While oceanic conditions may be improving, environmental conditions in San Francisco Bay have changed over the past three seasons. Low bay salinity is necessary for spawning success; therefore the current 3-year drought and associated high bay salinity may be hindering stock recovery. In the 2008-2009 season herring traveled further up the bay, presumably seeking lower salinities, and as a result spawned near Point San Pablo for the first time since 1976.

On November 7, 2007, the container ship, Cosco Busan spilled an estimated 58,000 gallons of bunker fuel (IFO 380) into San Francisco Bay. Due to the timing of the oil spill, herring resources were potentially impacted. Since the spill occurred prior to the majority of spawning schools entering the bay, the most likely impact would be to spawning habitat and egg and larval development in contaminated areas. Previous studies, conducted after the Exxon Valdez oil spill, on herring egg and larval development exposed to weathered oil and polycyclic aromatic hydrocarbons (PAH) indicated impacts range from increased egg mortality to larval developmental abnormalities resulting in poor survival. Both of these potential impacts can lead to reduced year class strength. A Natural Resources Damage Assessment (NRDA) team conducted a study of egg and larval development in oiled and non-oiled areas in the bay; however, the results have yet to be released. A review of existing literature indicates that potential impacts of oil exposure on herring may negatively affect year class strength, but similarly, other environmental conditions could negatively affect year class strength. Pacific herring have an evolved reproductive strategy to withstand predation, environmental uncertainties, and random events. However, the current population remains at a historical low level and significant increases in mortality at any life history stage can delay stock rebuilding. The findings of the NRDA report will assist in determining the immediate and long-term impacts to herring resources and assist in amending San Francisco Bay herring management strategies, if warranted.

San Francisco Bay Quota Options and Recommendation

The Department is providing the Commission the option to consider a quota within the range of zero to 10 percent of the 2008-2009 spawning biomass estimate of 4,844 tons. The Department is recommending a zero harvest or no fishery option for the 2009-2010 season. The Department recommends this option due to the unprecedented low spawning biomass levels in the San Francisco stock for three consecutive seasons, with the past season at a historical low. Based on the low numbers of herring returning from the 2003-2004, 2004-2005, and 2005-2006 year classes, the Department is concerned that there is not enough 4-year old and older herring to support a sustainable fishery. There is additional concern since the strength of recent year classes has been far below average and a strong year class to support the fishery in the future is not evident. Pacific herring is a critical species and plays an important role in oceanic and bay food webs. At these low levels, the San Francisco stock is considered stressed and it becomes vital to protect herring and their role in the ecosystem. Precautions need to be enacted so the San Francisco stock can be rebuilt to a level that ensures long term sustainability for the fishery and ensures there is an adequate number to preserve Pacific herring ecosystem roles, such as forage for oceanic and bay species. In addition, potential impacts from the Cosco Busan oil spill remain unresolved, as the results from the NRDA study on oil impacts to herring resources have not yet been released. Without the published results from the study, the Department must give special consideration to the potential and possibly long term negative impacts to herring eggs and larvae in areas exposed to oil.

A minimum spawning biomass for the commercial herring fishery in San Francisco Bay has not been adopted, but both the Pacific sardine and Pacific mackerel fisheries, managed by the federal government under the Coastal Pelagic Species Fisheries Management Plan, have a “cutoff” that specifies a spawning biomass level below which the quota is set at zero. The “cutoff” serves a dual purpose of recognizing the ecological importance of these species as forage for other species, while also providing conservation safeguards for the target stock. These safeguards prevent overfishing and allow a depressed stock to recover to a healthy status more rapidly than if fishing was conducted at low levels of biomass. If future stock assessment results show an increase above the “cutoff” level then reopening of the fishery is considered. Pacific herring occupy a similar ecological niche to other coastal pelagic species as an important forage species, and therefore some of the same management concepts may apply. A herring spawning biomass of less than 5,000 tons represents approximately 13 percent of the 10 year average of the spawning biomass of 40,495 tons (this average does not include the 2002-2003 season, for which no estimate was calculated). This percentage for

Pacific herring is comparable to the “cutoff” level established for Pacific sardine and below the level set for Pacific mackerel.

If the Commission chooses not to adopt the Department recommended “zero percent” harvest or “no fishery” proposal then the Department asks the Commission to consider the entire DHAC alternative. Due to the decline in herring biomass DHAC formulated the following quota and management provisions at the April 16, 2009 DHAC meeting. These provisions would only be in effect for the 2009-2010 season in San Francisco Bay:

1. Harvest rate of seven percent of the 2008-2009 spawning biomass
2. Shorten season to January and February 2010
3. One season with a common quota for all platoons
4. Modify permit requirements for 2009-2010 season:
 - Two permits of any type (DH, Odd, or Even) required for an individual to fish one net (minimum allowed per vessel)
 - Four permits of any type (DH, Odd, or Even) required for an individual to fish two nets (maximum allowed per vessel)

If the commission selects the DHAC alternative, or any quota level other than zero, the Department requests management provisions two to four above be adopted also to help meet conservation objectives. The harvesting of small quotas creates management challenges for the Department. A seven percent exploitation rate of the 2008-2009 spawning biomass would allow for a 339 ton quota in San Francisco Bay. This, or any other small quota, would require strict management oversight to prevent quota overages if divided among the current platoon system. This in turn would increase Department staff time and costs associated with managing the fishery. A shortened fishing season and combined platoons could offset management costs as well as fostering herring spawning escapement through a shortened fishing season. Combining all platoons into a single season would also allow herring fishery managers to track a single quota, increasing the likelihood that the Department could close the fishery before overfishing occurs. Once the fishery is closed, herring could continue to enter the bay and spawn undisturbed. To make this alternative viable, the existing permit structure will have to be modified. After discussions between DHAC members and Department staff, it was agreed that the proposed permit structure (provision four) would be the most equitable for herring permittees.

Tomales Bay

The Department is not recommending any change to the regulations for the Tomales Bay fishery quota. Proposed changes to the season dates are outlined under “Season Dates and Fishing Times” below.

Humboldt Bay and Crescent City Harbor

The Department is not recommending any change to the regulations for the Humboldt Bay or Crescent City Harbor herring fisheries including quotas and season dates.

SEASON DATES AND FISHING TIMES

San Francisco Bay

The Department is recommending that the Commission adopt a “no fishery option” for San Francisco Bay. The consensus of the DHAC, which met on April 16, 2009, was to recommend that the dates of the roe herring fisheries for DH, odd and even platoons in San Francisco Bay be set to open from 5:00 p.m. on Sunday, January 3, 2010, until noon on Friday, February 26, 2010.

Tomaes Bay

The Department is recommending that the Commission adopt the DHAC recommended changes to season dates and fishing times for Tomaes Bay. The consensus of the Tomaes Bay DHAC representatives for setting season dates was to recommend opening at noon on Sunday, December 27, 2009, until noon on Friday, February 26, 2010.

Ocean Waters

To help ensure the sustainability of Pacific herring the Department is recommending a closure of the ocean waters fishery for the 2010 season. The open-ocean fishery is the only herring fishery with no quota limit. A permit may be purchased by any commercial fisherman, which allows the take of herring in ocean waters from April 1 to October 31 for all authorized fishing gear except in districts 16 and 17 where the season is from April 1 to November 30. In ocean waters herring are caught opportunistically in Monterey Bay by purse seiners targeting other coastal pelagic fish species, with herring making up a small percentage of any given vessel's overall catch and revenue. A closure of the open-ocean fishery would prohibit the targeting of herring. However, coastal pelagic species sometimes mix in schools, and a small incidental allowance of no more than 10 percent herring by weight of any load would accommodate this behavior without impacting the fisheries for market squid and Pacific sardine.

From 1998 to 2002 intermittent herring landings were made from ocean waters, making up approximately one percent of California's overall herring catch. However, between 2003 and 2008 approximately 36 percent of the overall California commercial herring catch was landed by

this fishery. During this period herring landings from ocean waters averaged 144 tons per year (ranging from 38 to 371 tons). From 2003 to 2008 six purse seiners participated in the open ocean herring fishery, with a combined vessel average of five landings per year. Herring landings for this fishery occur between April and August with peak landings typically occurring in July. The degree to which California's herring spawning stocks mingle in the open ocean is unknown, and is a point of management concern, particularly for the Tomales and San Francisco Bay areas. Given the recent decline in the San Francisco Bay stock of Pacific herring the Department believes it appropriate to put in place additional conservation safeguards to protect herring during the upcoming season when they occur in the open ocean.

CHANGES FOR CLARITY AND CONSISTENCY

- The Department is recommending a minor change to the regulations to correct the Limited Entry Pacific Herring permit application number in subsection 163(b)(1) and the Herring Eggs on Kelp permit application number in subsection number 164(h)(1) to coincide with the 2009-2010 season applications.

- (b) Authority and Reference Sections from the Fish and Game Code for Regulation:

Authority: Sections 1050, 5510, 8389, 8550, 8552.1, 8553 and 8555, Fish and Game Code.
References: Sections 713, 1050, 7850, 7850.5, 7852.2, 8043, 8053, 8389, 8550-8557, and 8559, Fish and Game Code.

- (c) Specific Technology or Equipment Required by Regulatory Change:

None.

- (d) Identification of Reports or Documents Supporting Regulation Change:

(1) Informational Summary Packet for San Francisco Bay herring fishery

(2) Meeting Notes, Director's Herring Advisory Committee Meeting, April 16, 2009, San Francisco, California.

- (e) Public Discussions of Proposed Regulations Prior to Notice Publication:

(1) Director's Herring Advisory Committee Meeting, April 16, 2009, San Francisco, California.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change: No alternatives were identified.

(b) No Change Alternative:

A no change alternative would provide a quota for the 2009-2010 fishing season of 1,118 tons.

(c) Consideration of Alternatives:

The following Alternative was considered but rejected by the Department of Fish and Game:

EXTENSION OF FISHING TIME

Existing regulations specify that herring fishing is not permitted from noon on Friday through 5:00 p.m. Sunday in San Francisco Bay. DHAC members have proposed extending fishing time in San Francisco Bay by allowing fishing from noon on Friday to 9:00 a.m. Saturday when a spawning event is in progress. It is the goal of the industry in opening fishing during this time to increase the profitability of the fishery. Due to the limited time that herring are available to the fishery, a weekend spawning event could potentially represent a significant portion of herring that could be caught during the season and could represent significant income to the industry. Removal of a portion of the weekend restriction would allow San Francisco Bay herring fishermen to operate an additional 21 hours a week during the season, only at times when a spawning event is already in progress.

The existing Friday noon closure in San Francisco Bay was established to minimize the conflict with other boating users on the Bay, mainly the recreational power and sail boaters. With an extension of fishing time to encompass a portion of the weekend, there is a potential for a user conflict during the extended fishing hours. Extending fishing into the weekend in San Francisco Bay would also increase costs to the Department in the form of overtime for Department personnel to monitor fishing activity. As a limited entry quota fishery, landings information is strictly monitored especially when quotas are close to being reached for each fishing group. Until the issues mentioned above can be sufficiently resolved the Department does not support extension of fishing time.

V. Mitigation Measures Required by Regulatory Action:

See [Draft Supplemental Environmental Document – Pacific Herring Commercial Fishing Regulations](#).

VI. Impact of Regulatory Action

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

- (a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

Japan remains the major market for California herring roe (Kazunoko), which is processed for consumption in Japan as a traditional salted roe product or flavored roe product. Very recent gains in the Japanese Yen against the US dollar could provide for future increase in demand for herring roe. Nonetheless overall trends in ex-vessel prices continue to decline. Market observers attribute this decline to changing tastes, preferences, and demographics in Japan over the years.

The California commercial herring fishery takes place in four areas; San Francisco Bay, Tomales Bay, Humboldt Bay, and Crescent City Harbor. However, the greatest economic activity is derived from herring ventures in San Francisco Bay, which typically generate about 90 percent of the total average annual value for this California fishery. In real dollars, San Francisco Bay herring landings have averaged about \$2.7 million in ex-vessel value to the fishermen since 2004. All the herring fishermen and herring processing plants are small businesses as defined under Government Code Section 11342.610.

In the 2008-2009 commercial herring season, San Francisco Bay landings amounted to 507 tons total, out of an available 1,118 ton quota. Depending on which option the Commission chooses for 2009-2010, the quota will be between zero and 484 tons (10 percent of the 2008-2009 spawning estimate of 4,844 tons). Given this range relative to last season, the potential direct impacts are \$20,900 to \$479,000 in lost revenue to the fishermen. The resulting total output impact to the State's economy from this potentially lost revenue is \$37,000 to \$850,000. This is based on an economic output multiplier of 1.774 for calculating total direct, indirect, and induced impacts to California's economy from the herring fishery.

- (b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California:

Given a range of \$20,900 to \$479,000 in potential lost revenue to the fishermen, the employment impacts are estimated to be between five to 105 jobs lost. This is based on an employment multiplier of 218.3 jobs per million dollars in lost fishing revenue in the California herring fishery.

- (c) Cost Impacts on a Representative Private Person or Business:

The agency is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action. There are no new fees or reporting requirements stipulated under the proposed regulations.

- (d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

None.

- (e) Nondiscretionary Costs/Savings to Local Agencies:

None.

- (f) Programs mandated on Local Agencies or School Districts:

None.

- (g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4:

None.

- (h) Effect on Housing Costs:

None.

INFORMATIVE DIGEST/POLICY STATEMENT OVERVIEW

Under existing law, herring may be taken for commercial purposes only under a revocable permit, subject to such regulations as the Fish and Game Commission shall prescribe. Current regulations specify: permittee qualifications; permit application procedures and requirements; permit limitations; permit areas; vessel identification requirements; fishing quotas; seasons; gear restrictions; quotas; and landing and monitoring requirements.

The proposed regulations would establish the fishing quota, season dates and times for fishing operations for the 2009-2010 season in San Francisco Bay based on the most recent biomass assessments of spawning populations of herring as well as season dates and times for fishing operations for the 2009-2010 season in Tomales Bay. There are no quota changes proposed for Crescent City Harbor, Humboldt or Tomales bays for the 2008-09 herring season.

The following is a summary of the proposed changes in Sections 163, and 164, Title 14, CCR:

Option 1

- The Department recommended proposed regulations would set the San Francisco Bay quota at 0 tons, which represents a 0 percent harvest of the 2008-09 spawning biomass estimate. If the Commission were to adopt this option, this would close the herring roe and herring-eggs-on-kelp fishery in San Francisco Bay for the 2009-2010 season.
- The Department recommended proposed regulations would close the open ocean fishery that takes place for herring, primarily in Monterey Bay. An incidental allowance of no more than 10 percent herring by weight of any load composed primarily of other coastal pelagic fish species or market squid may be landed.
- The Department recommended proposed regulations would set the dates of the roe herring fishery in Tomales Bay from noon on Sunday, December 27, 2009, until noon on Friday, February 26, 2010.

Option 2

- The alternative proposed regulations would allow a quota within the range of zero to 10 percent of the 2008-2009 spawning biomass estimate of 4,844 tons.

- The alternative proposed regulations would allow a harvest rate of seven percent of the 2008-2009 spawning biomass.
- The alternative proposed regulations would create one San Francisco Bay herring season with a common quota for all platoons for the 2009-2010 season.
- The alternative proposed regulations would modify San Francisco Bay herring permit requirements only for the 2009-2010 season, by requiring two permits of any type (DH, Odd, or Even) for an individual to fish one net (minimum allowed per vessel), and four permits of any type (DH, Odd, or Even) for an individual to fish two nets (maximum allowed per vessel).
- Alternative proposed regulations would allow fishing in San Francisco Bay from 5:00 p.m. on Sunday, January 3, 2010, until noon on Friday, February 26, 2010.

The following are minor editorial changes proposed to improve clarity and consistency of the regulations:

- The proposed regulations would correct the Limited Entry Pacific Herring permit application number in subsection 163(b)(1) and the Herring Eggs on Kelp permit application number in subsection 164(h)(1) to coincide with the 2009-2010 season applications.