

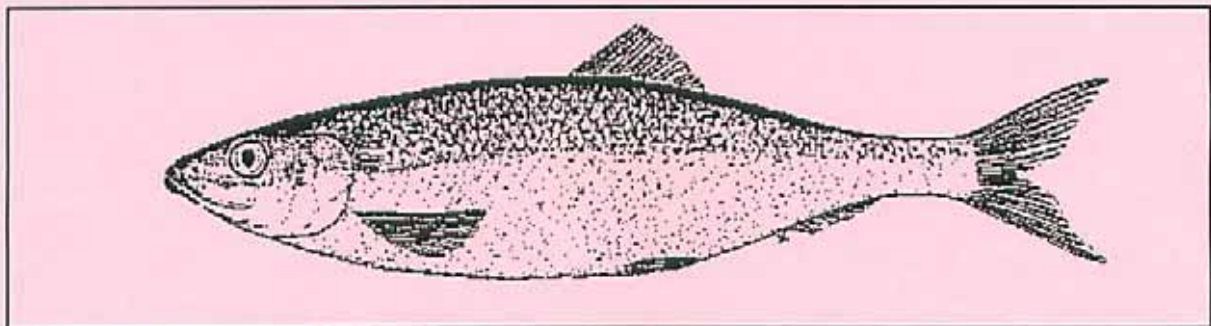
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FINAL

SUPPLEMENTAL ENVIRONMENTAL DOCUMENT

**PACIFIC HERRING
COMMERCIAL FISHING REGULATIONS**

(Sections 163, 163.5, and 164, Title 14, California Code of Regulations)



**2000
STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME**

**FINAL SUPPLEMENTAL ENVIROMENTAL DOCUMENT
PACIFIC HERRING COMMERCIAL FISHING REGULATIONS**

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SUMMARY

S.1 Introduction

This Final Supplemental Environmental Document (FSED) to the 1999 Final Supplemental Environmental Document (FSED), and Final Environmental Document (FED), Pacific Herring Commercial Fishing Regulations, 1998, provides the review and analysis required by California Environmental Quality Act (CEQA) Guidelines to assist the State's Fish and Game Commission in regulating the commercial harvest of Pacific herring throughout California ocean and estuarine waters. Specifically, the FSED reviews and evaluates proposed regulatory changes for the 2000-01 fishing season, supplementing and in some cases replacing aspects of the proposed project described in the 1999 FSED and 1998 FED. A Notice of Preparation (NOP) was used to identify and incorporate concerns and recommendations of the public, resource and regulatory agencies, and the fishing industry into the review and analysis of these proposed changes.

The FSED, includes seven chapters. Chapter 1 discusses the authorities and responsibilities under which the FSED was developed and describes its intended use. Chapter 2 describes the proposed project and alternatives for regulating the commercial harvest of herring. Chapter 3 describes the existing environment. Chapter 4 addresses the impacts of the proposed project and cumulative effects. Chapter 5 describes the impacts of the alternatives to the proposed project. Chapter 6 identifies consultations. Chapter 7 responds to comments received on the Draft Supplemental Environmental Document (DSED). References used throughout this FSED are listed in the Literature Cited section.

The proposed project has been selected as the preferred alternative based on the analysis of this FSED. The proposed project is identified as the preferred alternative because it provides a set of regulations most likely to achieve the State's policy with respect to the conservation, maintenance and utilization of the Pacific herring resource.

S.2 Proposed Project

The proposed project is a body of recommended regulations governing the commercial harvest of herring for roe products, the harvest of herring eggs-on-kelp, and the harvest of herring for fresh food, bait, and pet food. The proposed project takes the form of recommendations for continuation, amendment, or change to an existing body of regulations in effect since 1999 (Sections 163 and 164, Title 14, California Code of Regulations (CCR)).

The proposed regulatory changes will establish fishing quotas by area for the 2000-01 herring fishing season, based, in part, on the most recent assessments of the spawning populations of herring in San Francisco and Tomales bays. The proposed regulatory changes will also change the mesh size requirement for gill nets used in the roe fishery in Tomales Bay for the 2000-01 season only. Other changes relating to the Department of Fish and Game (Department) office location, seasons, permit amendments, permit suspensions, penalties in lieu of suspension or revocation, assist boats, authorized agents, method of take, harvesting, landing and processing requirements, and minor editorial changes are recommended to improve the clarity of the regulations or to provide for the efficient harvest and orderly conduct of the fishery, and to protect the resource.

The specific regulatory changes recommended for the 2000-01 season will: (1) provide for a 2,740-ton quota for San Francisco Bay (10 percent of the estimated spawning biomass for the 1999-2000 season); (2) provide an initial 200-ton fishing quota for Tomales Bay with provisions to increase the quota in season if escapement goals are achieved by February 15, 2001; (3) specify that the mesh size of any gill net used or possessed in the in the roe fishery in Tomales Bay, for the 2000-01 season only, shall be no less than 2 inches or greater than 2 ½ inches; (4) revise all sections that specify the city or street address of the Department's Bay Area office location; (5) set the dates of the roe herring fisheries in San Francisco Bay from noon on Tuesday, November 28, 2000 to noon on Friday, December 22, 2000 ("DH" gill net platoon only), and from 5:00 p.m. on Tuesday, January 2, 2001 to 5:00 p.m. on Friday, March 9, 2001; (6) set the dates of the roe herring fishery in Tomales Bay from 5:00 p.m. on Tuesday, December 26, 2000 until noon on Friday, December 29, 2000, and from 5:00 p.m. on Tuesday, January 2, 2001 to noon on Friday, March 9, 2001; (7) suspend

processing of permit amendment requests received by the Department from November 1 to November 15 until after the permit issuance date of November 15; (8) specify that if a permit is suspended due to the actions of a temporary substitute, then the temporary substitute is prohibited from participating in any herring fishery in the State for the suspension period of the permit which was suspended due to the actions of the temporary substitute; (9) clarify that the Commission has the authority to suspend or revoke any permit for cause after notice and an opportunity to be heard, or without a hearing upon conviction of a violation of any commercial fishing regulation or Fish and Game Code statute or Division 1, Title 14 regulation occurring while the permittee or temporary substitute is fishing as a participant of the herring fishery; (10) require that an applicant for a herring eggs-on-kelp permit submit all fees from prior seasons; (11) provide for the suspension of a line of kelp between two permanent structures and specify the conditions under which suspension between permanent structures is allowed; (12) require the permittee to submit a copy of the current California certificate of boat registration with their written notification of all vessels harvesting, processing or transporting herring eggs under the authority of the permit; (13) clarify the instructions for notifying the Department when suspending and/or harvesting kelp; (14) require the permittee to submit a copy of the current California commercial fishing license for each proposed authorized agent with each Authorized Agent Form; (15) revise the Herring Eggs On Kelp Monthly Landing and Royalty Report form number; and (16) make minor editorial revisions.

Other aspects of the existing herring regulations (Sections 163, 163.5, and 164, Title 14, California Code of Regulations) will remain unchanged.

S.3 Project Alternatives

Three alternatives are considered in this FSED. These alternatives include: (1) a no project (no fishery) alternative; (2) using existing regulations; and (3) establishing individual vessel quotas for gill net vessels in the herring roe fishery. Refer to Section 2.4, Project Alternatives, and Chapter 6, Analysis of Alternatives, of the FED, for a thorough description of alternatives and analysis of their impacts.

S.4 Existing Environment

Although the proposed project consists of regulatory changes for San Francisco Bay and Tomales Bay fisheries, the existing environment potentially affected by the proposed project and alternatives also includes the open ocean and bays in which herring occur. However, the environments most likely to be affected by the regulatory revisions outlined in this FSED are San Francisco Bay and Tomales Bay. Herring fisheries also occur in the Crescent City area, Humboldt Bay, and in the open ocean, primarily Monterey Bay. Refer to Section 3.3 of the Final Environmental Document, Pacific Herring Commercial Fishing Regulations, for a thorough description of these environments.

S.5 Environmental Impacts

S.5.1 Proposed Project

An analysis of the potential impacts of the proposed project described by this FSED did not identify any new potential impacts that are not analyzed in the FED. Several areas of potential concern were identified in the FED. The FED identified the area with the highest potential for impacts as the San Francisco Bay area, which, supports the largest herring roe fishery in the State. Localized, short-term, and less than significant impacts were identified in the FED for several areas of potential concern including: boat and vehicle traffic circulation, water quality, air quality, housing and utilities, geology, scenic quality, recreation, and noise. The FED found biological impacts to have the greatest potential for significant environmental impact, but found these impacts to be localized, short-term, and less than significant, with mitigation provided by current management strategy and Department-conducted herring population monitoring. Refer to Chapter 4 of the FED for a thorough environmental impact analysis of the proposed project.

S.5.2 Alternatives

The alternatives proposed in this DSED are the same as those described in the FED. A thorough analysis of the impacts of these alternatives is provided in Chapter 6 of the FED.

Alternative 1 (no fishery)

Localized, short-term, and less than significant impacts to vessel and vehicle traffic circulation, water quality, air quality, housing and utilities, scenic quality, recreational

opportunities, and noise levels identified for the proposed project would be eliminated or redistributed in an unpredictable manner.

Potential biological impacts associated with a no project alternative include an increased rate of natural mortality, the potential for deterioration in the condition of the herring population as it reaches carrying capacity, and potential impacts to other species that compete with herring for food resources.

Alternative 2 (existing regulations)

In most regards, the environmental impacts will be comparable to those of the proposed project. Although this alternative does provide for an adjustment of quotas and season dates, it does not address certain fishery-related problems considered in amendments or changes to existing regulations.

Alternative 3 (individual vessel quota)

Individual vessel quotas, rather than the platoon-based quota system currently used in the herring roe gill net fishery, would add incrementally to most impacts due to longer actual fishing seasons. However, these impacts are still expected to be short-term, localized, and less than significant for most environmental categories.

Wastage of resource could result from sorting to remove males from the catch or dumping of unripe fish to achieve higher roe content (and higher prices). However, fewer illegal nets are likely to be lost, reducing impacts from "ghost" net fishing.

S.5.3 Cumulative

An analysis of the cumulative impacts of the proposed project revealed no additional impacts to those addressed in the FED. An analysis of cumulative impacts is provided in Chapter 5 of the FED.

A variety of factors have the capacity to influence Pacific herring population status in California in addition to the proposed project including: (1) biological events, (2) competitive interactions with other pelagic fish and fisheries, (3) oceanographic events, (4) habitat loss, and (5) water quality. However, as with potential impacts from the on-going commercial harvest of herring, continued monitoring of the herring resource and oceanographic conditions should herald any directional trends long before the stock's reproductive potential would be jeopardized.

S.6 Areas of Controversy

The following areas of controversy have been identified regarding commercial herring fishing:

1. Potential interactions between marine mammals and commercial fishing activities;
2. Importance of herring as a forage species for sea birds, marine mammals, and other fishes;
3. Inadequate knowledge of the resource;
4. Errors in stock assessment;
5. Insufficient management resources;
6. Potential impact of unforeseen events or catastrophes (e.g. oil spills; chemical spills).

These areas of controversy are addressed in Chapter 5 of the 1998 FED.

S.7 Issues to be Resolved

At issue is whether or not to provide for commercial fishing as an element of herring management in California. If commercial herring fishing is authorized, decisions are needed to specify the areas, seasons, fishing quotas and other appropriate special conditions under which fishing operations may be conducted. This document, the FED and the 1999 FSED include a review and discussion of the proposed project as well as alternatives.

Chapter 1. INTRODUCTION

1.1 Background

The Final Supplemental Environmental Document (FSED) presented here provides the review and analysis necessary to aid the California Fish and Game Commission (Commission) in taking action to regulate the commercial harvest of herring in California. It was prepared using the California Environmental Quality Act (CEQA) Guidelines. The project being considered is the proposed changes to the regulations for the 2000-01 commercial herring fishing season.

This FSED was prepared as a supplement to: (1) the Final Environmental Document (FED), Pacific Herring Commercial Fishing Regulations, certified by the Commission in August 1998; and (2) the Final Supplemental Environmental Document (FSED), certified by the Commission in August 1999. The FED outlines the full proposed project, consisting of the operation and management of California's Pacific herring commercial fishery. The FSED of 1999 provides for the revisions of the proposed project contained in the FED and regulatory revisions necessary for the conductance of the 1999-2000 Pacific herring commercial fishing season. This FSED supplements both of these documents and provides for revisions to the regulations for the 2000-01 Pacific herring commercial fishing season.

The California Department of Fish and Game (Department) and Commission hold the public trust for managing the State's wildlife populations, including herring. That responsibility is fulfilled by a staff of experts in marine resource management and enforcement issues related to California's herring resource. The knowledge and training represented by that expertise qualifies them to perform the review and analysis of proposed commercial herring harvest regulations contained in this document.

1.2 The Functional Equivalent

CEQA requires all public agencies in the State to evaluate the environmental impacts of projects that they approve or carry out. A Final Environmental Document for Pacific Herring Commercial Fishing Regulations was certified by the Fish and Game Commission in 1998. Section 1.2 of the Final Environmental Document (FED) provides an explanation of how the

FED satisfies that requirement. A subsequent FED is required: 1) when subsequent changes are proposed in the project which require important revisions of the previous FED due to new significant environmental impacts not considered in a previous FED; or 2) when new information of substantial importance to the project becomes available (CEQA Guidelines Section 15162, Public Resources Code Section 21166).

The agency may choose to prepare a supplement to a FED instead of a subsequent FED if only minor additions or changes are necessary to make the previous FED adequately apply to the project in the changed situation. This supplement to the FED need only contain the information necessary to make the previous FED adequate for the project as revised. The draft supplemental document is given the same notice and public review given to a draft environmental document, and may be circulated by itself without the previous FED. A Notice of Preparation for the Draft Supplemental Environmental Document (DSED) was circulated to interested parties on March 21, 2000. A 45-day public comment period for this DSED ended August 4, 2000. When the agency decides whether to approve the project, the decision-making body considers the previous FED as revised by the supplemental environmental document. (CEQA Guidelines Section 15163).

1.3 Scoping Process

The Department invited interested parties to a public meeting held April 5, 2000, to receive input on the proposed project and the content of the DSED. The Department also distributed a Notice of Preparation (NOP) to interested parties on March 21, 2000. This provided an opportunity for the concerns of responsible agencies and citizens to be addressed in the DSED.

1.4 Report Availability

This Final Supplemental Environmental Document is available at the Fish and Game Commission Office in Sacramento, and Department of Fish and Game offices.

1.5 Authorities and Responsibilities

The Legislature formulates the laws and policies regulating the management of fish and wildlife in California. The State's policy with respect to aquatic resources is to encourage the conservation, maintenance and utilization of the living resources of the ocean and other waters under the jurisdiction and influence of the State for the benefit of all the citizens of the state. It is also the State's policy to promote the development of local fisheries and distant-water fisheries based in California in harmony with international law respecting fishing and the conservation of the living resources of the oceans and other waters under the jurisdiction and influence of the State (Section 1700, Fish and Game Code, Appendix 1 of FED).

The Legislature provides further policy direction regarding herring management in sections 8550 through 8559, Fish and Game Code (Appendix 1 of FED). The Legislature delegated authority to the Commission, whose members are appointed by the Governor, to regulate the commercial harvest and possession of herring (section 8553, Fish and Game Code). The remaining code sections provide for a limited entry fishery and require periodic review of regulations and policies. The Commission holds public meetings at its discretion to consider and adopt revisions to these regulations. Recommendations and comments from the Department, other agencies and the public are received typically at two public meetings each year prior to the Pacific herring commercial fishing season.

The authority to prepare a supplemental environmental document is given in Section 21166 of the Public Resources Code.

Chapter 2. PROJECT DESCRIPTION

2.1 Project Objectives

The proposed project as defined in the FED is the regulation of Pacific herring fisheries under the State's jurisdiction. The regulations are considered for inclusion in the California Code of Regulations (CCR) to implement the State's policies for managing the commercial use of Pacific herring (Sections 163, 163.5, and 164, Title 14, CCR). The proposed project and alternatives addressed in this FSED take the form of recommendations for amendment or change to an existing body of regulations. The recommendations and alternatives are based on biological assessments of existing stock conditions and comments received from interested individuals, commercial fishermen, and from the Director's Herring Advisory Committee¹. The California Fish and Game Commission, whose members are appointed by the Governor, has legislatively delegated authority to act on these recommendations.

Project objectives include:

- maintaining healthy Pacific herring stocks in California;
- controlling commercial harvest of Pacific herring to maintain a sustainable fishery;
- providing sufficient Pacific herring to support recreational uses; and
- providing sufficient Pacific herring to conserve living resources of the ocean that utilize herring as a food source.

Under existing law, herring may be taken for commercial purposes only under a revocable permit, subject to such regulations as the Commission shall prescribe (Section 8550 Fish and Game Code, Appendix 1, FED). Current regulations specify: permit qualifications, permit validation requirements, permit limitations, permit areas, seasons, fishing quotas, gear restrictions, and landing and monitoring requirements.

The proposed project addressed by this FSED consists of amendments and changes to existing regulations for the 2000-01 commercial herring fishing season. The proposed

¹ The DHAC consists of 13 representatives from the herring fishery, including buyers and fishermen. They are appointed by the Director and serve at his pleasure.

project changes fishing quotas by area and gear type. Quota recommendations for San Francisco Bay and Tomales Bay are based primarily on the most recent assessments of the size of the spawning populations of herring in those areas. Other proposed amendments and changes are intended to improve the efficient and orderly conduct of herring fisheries and the management of herring stocks. No amendments or changes to the regulations are proposed for Crescent City, Humboldt Bay, and open ocean herring fisheries for the 2000-01 commercial herring fishing season.

2.2 Project Locations

Permits have been issued for commercial herring fishing in five geographically distinct areas of the ocean and estuarine waters under the jurisdiction of the state of California (Figure 2.1). Many of the regulations considered by this document are specific to an area and type of fishing operation. This section describes each area for which regulatory changes are proposed, including current commercial fisheries for herring, and proposed seasons, quotas, and geographical restrictions for those fisheries. A complete description of commercial herring fishing areas is provided in Section 2.2 of the FED. The environmental setting for each geographical fishing area is detailed in Section 3.3 of the FED.

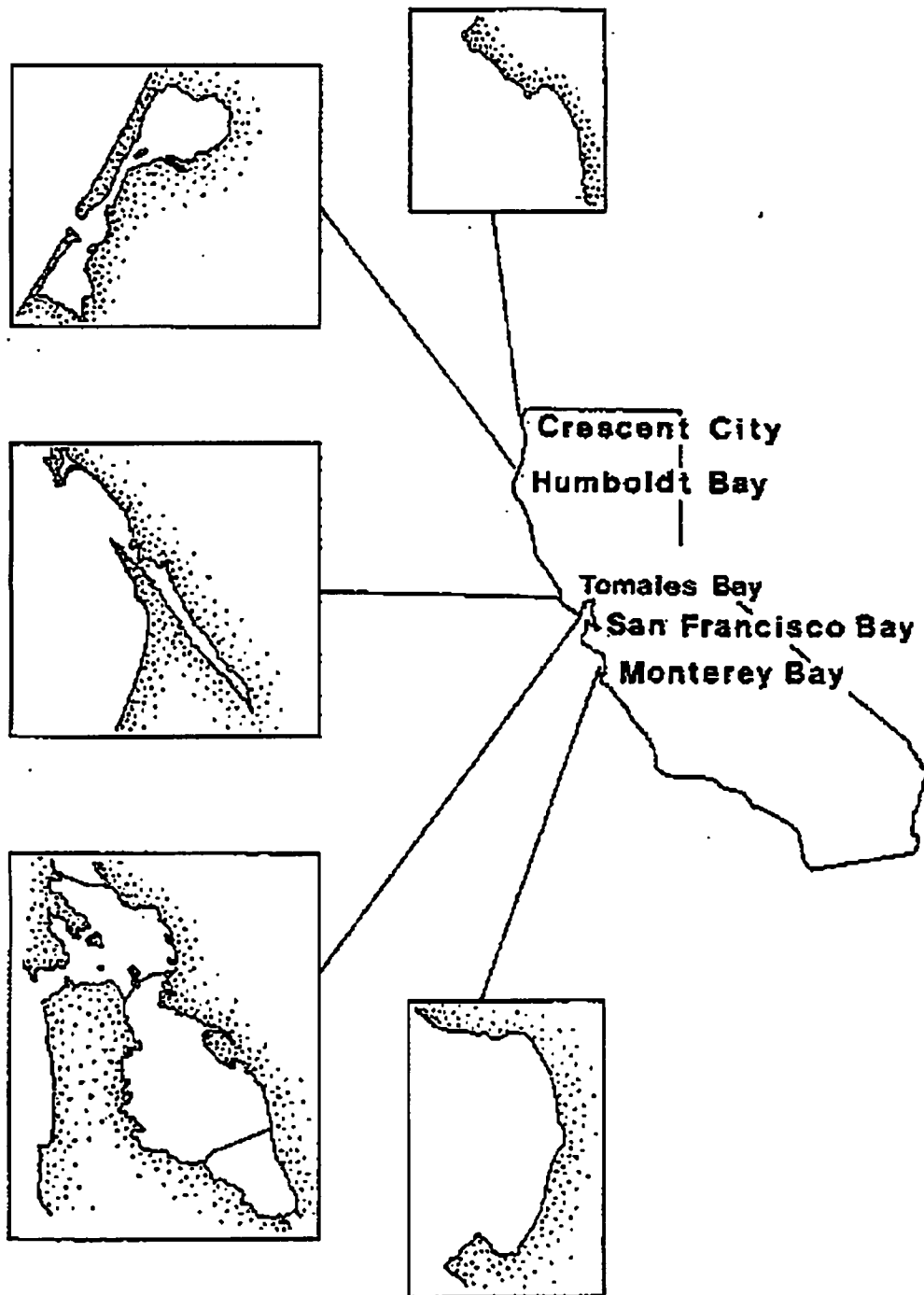


Figure 2.1. Locations of commercial herring fisheries

2.2.1 San Francisco Bay

2.2.1.1 Herring Roe Fishery

Season: Noon on November 28, 2000 until noon on December 22, 2000, and 5:00 p.m. on January 2, 2001 until 5:00 p.m. on March 9, 2001.

Note: Herring fishing is not permitted from noon Friday through 5:00 p.m. Sunday.

Gill net permittees (DH) November 28-December 1, December 3-8, December 10-15, December 17-22, and, if necessary, after other platoons have reached their quotas until DH quota is reached or last day of season.

Gill net permittees (Even #) January 2-5, January 14-19, January 28-31, February 1-2, February 11-16, February 25-28, March 1-2.

Gill net permittees (Odd #) January 7-12, January 21-26, February 4-9, February 18-23, March 4-9.

Quota: 2,740 tons

Note: The overall quota for the roe fishery will be reduced by transfers to the eggs-on-kelp fishery.

Area: Waters of Districts 12 and 13 and that portion of District 11 lying south of a line extending from Peninsula Point (the most southerly extremity of Belvedere Island) to the easternmost point of the Sausalito ferry dock.

1) Regulations prohibit the setting or operating of nets within 300 feet of the following piers and recreation areas: Berkeley Pier, Paradise Pier, San Francisco Municipal Pier between the foot of Hyde Street and Van Ness Avenue, Pier 7 (San Francisco), Candlestick Point State Recreation Area, the jetties in Horseshoe Bay, and the fishing pier at Fort Baker. Regulations also prohibit the setting or operating of nets within 70 feet of Mission Rock Pier.

2) Regulations prohibit the setting or operating of nets in Belvedere Cove north of a line drawn from the tip of Peninsula Point to the tip of Elephant Rock. Regulations also prohibit the setting or operating of gill nets from November 15 through February 15 in the area bounded by a line drawn from the middle anchorage of the western section of the Oakland Bay Bridge (Tower C) to the Lash Terminal buoy #5 to the easternmost point at Hunter's Point (Point Avisadero), from Point Avisadero to the Y"A" buoy, from the Y"A" buoy to Alameda NAS entrance buoy #1 (entrance to Alameda Carrier Channel) to the Oakland Harbor Bar Channel buoy #1, and then to from the first Bar Channel buoy to Tower C of the Bay Bridge.

2.2.1.2 Herring Eggs-On-Kelp Fishery

Season: December 1 to March 31

Quota: An individual quota of 1.3 tons for transferred gill net permits, an individual quota of 4.8 tons for transferred "CH" permits.

Note: The combined quota for harvest of herring eggs-on-kelp depends on the number of "CH" and gill net permits transferred to the herring eggs-on-kelp fishery.

Area: Waters of Districts 11, 12, and 13, and that portion of District 2 known as Richardson Bay.

Note: The area open to the herring eggs-on-kelp fishery is further restricted. Rafts and lines may not be placed in any waters or areas otherwise closed or restricted to the use of herring gill net operations, except the areas known as Belvedere Cove and Richardson Bay or except where written permission is granted by the owners or controlling agency (e.g., Navy, Coast Guard). When rafts or lines are placed in Belvedere Cove or Richardson Bay, they must be tied to a permanent structure (e.g. pier, dock).

2.2.1.3 Fresh Food Fishery (not for roe purposes)

Season: November 2 through November 15 and April 1 through October 31.

Quota: 20 tons

Note: No permittee may take or possess herring except in the amount specified on a current daily market order, not to exceed 500 pounds, from a licensed fish dealer.

Area: Same as herring roe fishery

2.2.2 Tomales Bay

2.2.2.1 Herring Roe Fishery

Season: 5:00 p.m. on December 26 until noon on December 29 and from 5:00 p.m. on January 2 until noon on March 9.

Note: Herring fishing is not permitted from noon Friday through 5:00 p.m. Sunday.

- Quota:** The total take of herring for roe purposes shall not exceed 200 tons for the season. However, if spawning escapement, as determined by the Department, reaches or exceeds 2,000 tons prior to February 15, the quota shall be increased as follows: 1) if spawning escapement is more than 2,000 tons, the total take of herring shall not exceed 300 tons for the season; 2) if spawning escapement is more than 3,000 tons, the total take of herring shall not exceed 400 tons for the season; 3) if spawning escapement is more than 4,000 tons, the total take of herring shall not exceed 500 tons for the season.
- Area:** Tomales Bay includes the waters of District 10 lying south of a line drawn west, 252° magnetic, from the western tip of Tom's Point to the opposite shore.

2.2.2.2 Fresh Food Fishery (not for roe purposes)

- Season:** November 2 through November 15 and April 1 through October 31.
- Quota:** 10 tons
- Note: No permittee may take or possess herring except in the amount specified on a current daily market order, not to exceed 500 pounds, from a licensed fish dealer.
- Area:** Same as herring roe fishery.

2.3 Project Characteristics

The proposed project recommends continuation of the existing regulations as modified by changes discussed below for San Francisco Bay and Tomales Bay. No modifications are proposed for Crescent City, Humboldt Bay, and open ocean herring fisheries. These regulations, as amended, will assist in the control of the commercial harvest of herring at a level that meets the state's policy with respect to the use of aquatic resources. This section states the specific purpose of the regulations and summarizes the factual basis for the regulation.

The commercial herring roe and eggs-on-kelp fisheries 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 population of herring in San Francisco and Tomales Bays (Sec 3.2.2.1, FED). These data serve as the basis for establishing fishing quotas for the next season.

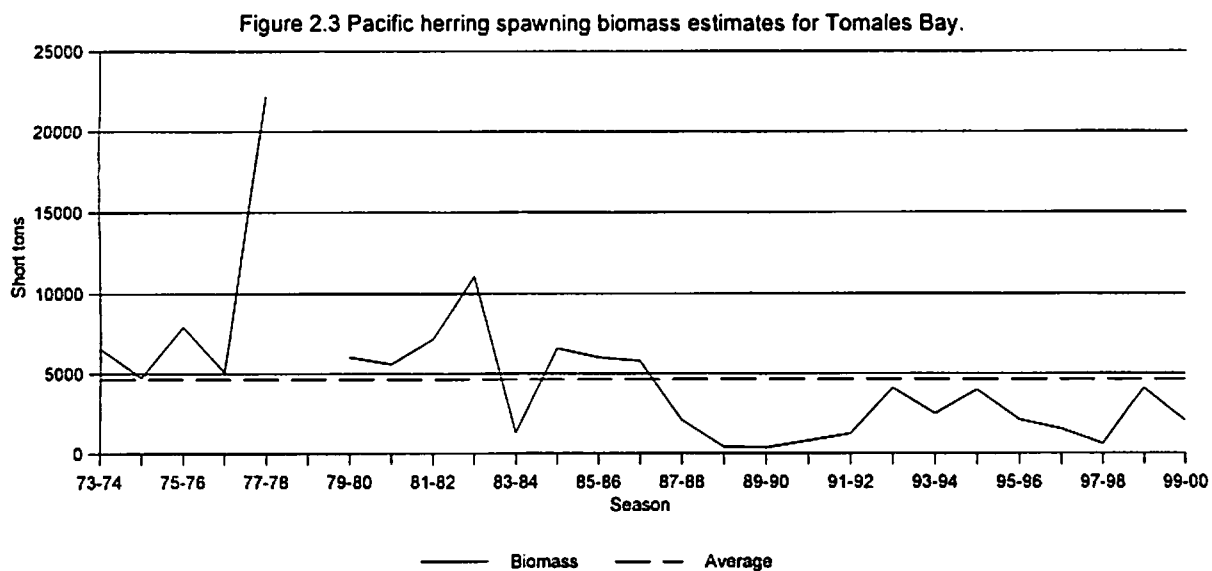
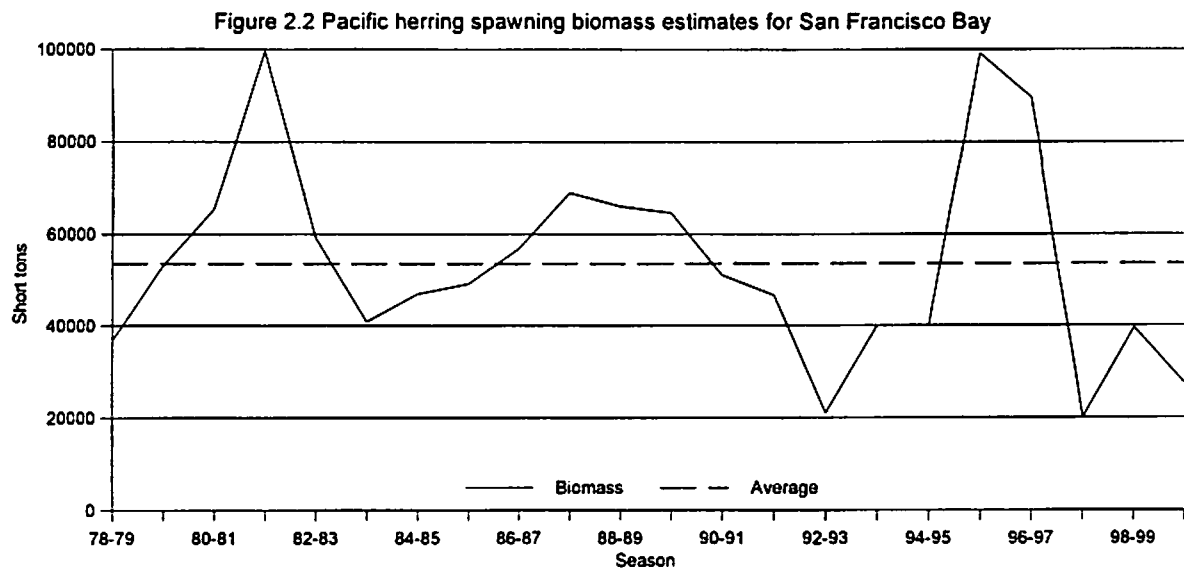
The principal regulatory changes that were proposed for the 1999-2000 season (addressed

in the FSED, 1999) included: a 5,925-ton fishing quota for San Francisco Bay and an initial 400-ton fishing quota for Tomales Bay; provisions for a mesh-size study in Tomales Bay; deleting the requirement that all herring permittees must hold an operators license; prohibiting a permittee whose permit has been suspended for the entire season from participating in any herring fishery in the State that season; and requiring herring buyers to report roe test data on landing receipts. The regulatory changes proposed for the 1999-2000 season were approved by the Fish and Game Commission as proposed (Section 2.3 of the FSED, 1999).

In addition to annual changes in the quota, management recommendations to improve or provide for the efficient harvest and orderly conduct of the herring fisheries are solicited from interested fishermen and individuals at public meetings and from the Director's Herring Advisory Committee, which is composed of various representatives from the commercial herring fishing industry. The proposed amendments to Section 163, 163.5 and 164, Title 14, CCR, addressed by this FSED, reflect both Department and public recommendations.

Annual assessments of the size (biomass) of the herring spawning populations in San Francisco and Tomales Bays are conducted by the Department. In San Francisco Bay, assessments are made using both hydroacoustic and spawning ground surveys. In Tomales Bay, assessments are made using spawning ground surveys. Hydroacoustic surveys use sound transmitted from a transducer on a boat and record returning echoes to determine the size and density of fish schools (Section 3.2.2.1.2 of the FED). Spawning ground surveys assess the total number of eggs spawned and back-calculate the parental population size (Section 3.2.2.1.1 of the FED). Spawning biomass estimates for San Francisco Bay and Tomales Bay are shown in Figure 2.2 and 2.3, respectively.

Annual fishing quotas are conservative and limit the total commercial catch to no more than 20% (exploitation rate) of the previous season's spawning biomass. This exploitation level was selected, based on computer simulations (Section 3.2.4 of the FED), to help ensure adequate protection for the herring resource and to provide for the long-term yield of the fishery. Typically, exploitation rates of no more than 15% are recommended to ensure that the 20% maximum is not exceeded. Quotas are not determined by a fixed percentage; they



are modified based on additional biological and fishery data collected each season, such as growth rates, strength and importance of individual year-classes, and recruitment of incoming year-classes.

2.3.1. Herring Roe Fisheries

2.3.1.1. San Francisco Bay 2000-01 Quota

The 1999-2000 spawning biomass estimate for San Francisco Bay is 27,400 tons (including catch), a 31.5% decline from last season's estimate, and close to half of the 22-year average of 53,678 tons (Figure 2.2). Although favorable ocean conditions have returned since the 1997 El Niño, spawning biomass remains low. The once very strong 1994 and 1995 year classes (6- and 5-year-old fish, respectively) appeared in much lower numbers than expected, apparently due to increased mortality. In addition, poor recruitment of 2- and 3-year-old herring also contributed to this year's low spawning biomass estimate.

A fishing quota of 2,740 tons, which is 10% of the 27,400 ton spawning biomass estimate, is proposed for the 2000-01 San Francisco Bay herring fishery. The 2,740-ton quota proposal accounts for the low 1999-2000 spawning biomass estimate and relatively weakened age structure, yet recognizes the continuation of favorable oceanic conditions vital to the growth and survival of herring. Current information, based on herring young-of-the-year data, indicates that the 2-year-old recruits next season (i.e., the 1999 year class) may be weak.

Notwithstanding possible poor recruitment and a weakened age structure of the population, ocean conditions were favorable and the health of herring returning to San Francisco Bay was good during the 1999-2000 season. The weight of herring at any given length or age was at or above expected levels, which indicates that individual fish condition has recovered from some of the negative effects of the 1997-98 El Niño event, despite the poor population structure. It is for these reasons that the Department proposes a fishery at a conservative level of 10% (exploitation rate) for the 2000-01 season. Proposing a higher exploitation rate would not be consistent with managing this stock conservatively for the future.

Within the overall quota in San Francisco Bay, separate quotas are established for each gill net platoon (i.e., December, Odd and Even). The overall quota is divided among the three platoons in proportion to the number of permits in each platoon. Slight annual

adjustments in the quota assignments for each gill net platoon are needed to account for attrition of permittees and the use of herring permits in the herring eggs on kelp fishery.

2.3.1.2. Tomales Bay 2000-01 Quota

The 1999-2000 spawning biomass estimate for Tomales Bay is 2,011 tons and is about one-half of last season's 4,069 ton biomass (Figure 2.3). While the 1999-2000 season biomass estimate is well below the 25-year long-term average of 4,777 tons, it was only 25 percent less than the 7-year average of 2,678 tons since the Tomales Bay herring fishery re-opened in the 1992-93 season. Preliminary aging of Tomales Bay herring suggests that reduced growth of herring in offshore waters and loss of older fish from the spawning population has resulted in a mean length of herring in the commercial catch below the 5-year average. The Department recommends continuing the existing management regime and proposes an initial fishing quota of 200 tons (10 percent of the 1999-2000 spawning biomass estimate). The proposed regulations also contain provisions to increase the quota and percent based on in-season estimates of spawning escapement. If the spawning escapement reaches or exceeds 2,000 tons prior to February 15, 2001, then the quota shall be increased as follows: (1) If the spawning escapement is more than 2,000 tons, the total take shall not exceed 300 tons for the season; (2) the spawning escapement is more than 3,000 tons, the total take of herring shall not exceed 400 tons for the season; (3) If the spawning escapement is more than 4,000 tons, the total take of herring shall not exceed 500 tons for the season.

2.3.1.3. Season Dates

Season opening and closing dates for San Francisco and Tomales bays, as well as the dates of various provisions of the regulations, are adjusted each year to account for annual changes in the calendar. The consensus of the Director's Herring Advisory Committee which met on March 23, 2000, was to set the dates of the roe herring fisheries in San Francisco Bay from noon on Tuesday, November 28, 2000 to noon on Friday, December 22, 2000 ("DH" gill net platoon only), and from 5:00 p.m. on Tuesday, January 2, 2001 to 5:00 p.m. on Friday, March 9, 2001. The consensus among Tomales Bay permittees was to recommend opening at 5:00 p.m. on Tuesday, December 26, 2000 until noon on Friday, December 29, 2000, and from 5:00 p.m. on Tuesday, January 2, 2001 to noon on Friday, March 9, 2001.

2.3.1.4. Gill Net Mesh Length Reduction

Mesh size is used to control the size of fish targeted by the fishery. Existing regulations state the length of the meshes in any gill net used or possessed in the Tomales Bay herring fishery shall not be less than 2 1/8 inches or greater than 2 1/2 inches. The proposed amendment will set the minimum mesh size at 2 inches in Tomales Bay, for the 2000 to 2001 season only. This one-year amendment time frame will allow the Department to more accurately evaluate gear performance on the current population, and assess whether management goals are being met at this reduced gill net mesh length.

For the past three seasons, the commercial gill net catch for the Tomales Bay roe fishery has been far below the Department established annual quotas. While the Department conservatively sets Tomales Bay initial quotas at 10 percent of the previous season's spawning biomass (half of the 20 percent maximum exploitation rate stated in the herring management plan), the exploitation rate for this fishery has not been more than 2.1 percent since the 1997-98 season.

Preliminary aging of Tomales Bay herring caught for research purposes during the 1999-2000 season suggests that there has been reduced growth of herring in offshore waters. This shorter length at age and loss of older fish in the population has resulted in a mean length of herring in the commercial catch below the 5-year average. The proposed minimum mesh size of 2 inches in the Tomales Bay gill net fishery for the 2000-01 season will allow the Department to (1) evaluate the use of this mesh length on the size and age composition of the current population, and (2) assess whether increased catch per unit effort (CPUE) can be obtained for the catch and still maintain the Department's management goal of a conservative 10 percent exploitation rate. The Department proposes this year-to-year evaluation approach to ensure conservative management of the Pacific herring resource.

2.3.1.5. Department Office Location

Existing regulations specify the Department's San Francisco Bay area office location. The proposed amendment will correct and clarify all sections of the regulations that specify the street address and/or city of the Department office. The Department's Menlo Park office is scheduled for relocation prior to the 2000-01 season, and the specific location is yet to be

determined. The proposed amendment removes all references to the Menlo Park Department office location for purposes of clarity.

2.3.1.6. Permit Transfer, Substitute, and Simultaneous Fishing Requests

Existing regulations provide that herring for roe permits will be issued beginning November 15. To facilitate timely issuance of permits, the Department proposes modifying regulations to state that any request received from November 1 to November 15 to transfer or substitute a permit or to simultaneously fish two permits on a single vessel will be processed after November 15. The Department needs the time period between November 1 and November 15 for preparing permits and permit packets that will be mailed to herring permittees beginning November 15. This regulation will improve the Department's ability to provide completed permits to herring permittees in a timely manner. The regulation regarding the \$50 fee that is charged for any requests received by the Department after the issuance date of November 15 will not change.

2.3.1.7. Penalties

Existing regulations specify that, if a permit is suspended due to the actions of a temporary substitute, that temporary substitute may not participate in any herring fishery in the State during the following season. Under existing regulations, the restrictions placed on the temporary substitute apply to the entire following season, regardless of the time period to which the suspension applies. The proposed amendment specifies that the time period that the temporary substitute is prevented from participating in any herring fishery is equal to the time period of the suspension. Additional proposed amendments clarify that the Commission has the authority to suspend or revoke any permit for cause after notice and an opportunity to be heard, or without a hearing upon conviction of a violation of any commercial fishing regulation (Title 14, CCR) or Fish and Game Code statute occurring while the permittee or temporary substitute is fishing as a participant of the herring fishery.

2.3.2. Roe-on-Kelp Fishery

2.3.2.1. Permit Conditions

Subsections 164(f) and 164(g) establish the permit conditions and application requirements for herring eggs on kelp permittees. The regulations require that in addition to

any license fees required, every person operating under a permit to harvest herring eggs shall pay a royalty of \$500 per ton of herring eggs on kelp taken. The royalty fee includes the landing tax imposed pursuant to article 7.5 (commencing with section 8040, chapter 1, part 3, division 6, of the Fish and Game Code.), and the royalty fee required for the harvesting of kelp pursuant to Section 165, Title 14, CCR. The proposed amendment will require that all fees from all prior seasons must be submitted by each applicant to receive a herring eggs on kelp permit. The amendment is intended to aid in the enforcement of existing regulations, and will not impose any additional burden or responsibility on the permittees. Currently, the only mechanism for ensuring that fees from prior seasons are submitted is to issue a citation and proceed through the judicial system.

2.3.2.2. Suspension of Lines

Subsection 164(i)(1) provides that not more than two rafts and/or two lines may be used per permit. Subsection 164(i) defines a line as a continuous piece of line of any length that is suspended under a suitable permanent structure (e.g., dock or pier). The herring eggs on kelp permittees have requested that the regulations be modified to allow lines to be suspended between two permanent structures (e.g., docks or piers). The proposed regulation will amend the section to allow one of the two lines to be suspended between two permanent structures (e.g., docks or piers) provided each end of the line is attached to a permanent structure (e.g., dock or pier). Existing gear regulations and conditions will continue to apply, specifically: the total surface area that each line may occupy is not to exceed 2,500 square feet; the line shall not be placed as to hinder navigation; the permittee shall obtain prior written approval from the appropriate owners or controlling agency; the amount of gear allowed remains limited to not more than two rafts and/or two lines per permit; only authorized agents or permittees would be permitted to harvest from the permanent structures to which the line is attached; the ownership of each line shall be clearly identified with the corresponding permit number; and for the purposes of line suspension, buoys are not considered permanent structures.

2.3.2.3. Boat Registration

Subsection 164(i)(6) states that the permittee shall notify the department in writing providing the name and registration number of any vessel that will be used for harvesting,

processing or transporting herring eggs under the authority of the permit. The proposed revision to this regulation will require the permittee to submit a copy of the current California certificate of boat registration with their written notification. Subsection 164(i)(5) states that each vessel operating under or assisting in fishing operations under a permit issued pursuant to existing regulations shall have a current Fish and Game commercial boat registration number. The proposed revision to this regulation is designed to facilitate meeting its requirement, and assist the Department in verifying boat registration information.

2.3.2.4. Department Office

Existing regulations state that the permittee shall notify the Department biologist at the Menlo Park office. The Department office in Menlo Park is scheduled for relocation prior to the 2000-2001 herring season, and the specific location is yet to be determined. Therefore, the Department proposes specifying the San Francisco Bay Area Marine Region office on the regulations and designating the appropriate telephone numbers on the permit. This will eliminate any confusion that might arise when the location and phone numbers are changed.

2.3.2.5. Notification

The regulations specify that a permittee shall notify the Department biologist a maximum of 4 hours prior to suspending kelp. The current regulatory language has been the cause of confusion for permittees. The proposed modification would revise the regulatory language describing kelp suspension by replacing the phrase, "a maximum of" with "within a" to clarify the intent of the regulations.

2.3.2.6. Authorized Agent

Existing regulations allow each permittee to designate two authorized agents by submitting an Authorized Agent Form to the Department. The regulations also allow the permittee to change authorized agents by submitting a new Authorized Agent Form. The existing regulations allow a person to act as an authorized agent when the Department receives the Authorized Agent Form, and the permittee has received written approval from the Department. The proposed regulation would require that a copy of the current California commercial fishing license for each authorized agent be submitted with the Authorized Agent Form. Subsection 164(j)(1) requires that every person who harvests, receives, processes or wholesales herring eggs shall obtain all appropriate commercial fish licenses and permits

(required by Fish and Game Code sections 8030-8038). The proposed regulation is designed to facilitate this requirement, and assist the Department in verifying commercial fishing license information.

2.3.2.7. Corrections and Clarifications

Several modifications in language are proposed to correct or clarify the existing regulatory language. The proposed amendment corrects the Herring Eggs on Kelp Monthly Landing and Royalty Report form number, MR 143 HR (6/99) to FG 143 HR (5/00) wherever specified in Section 164, Title 14, CCR.

2.4 Project Alternatives

Three alternatives to the proposed project are considered. Two of these alternatives take the form of additional changes to the existing regulations that could feasibly be joined. The third alternative is a no project (no fishery) alternative. In evaluating alternatives, the comparative merits and impacts of individual alternatives that could be logically and feasibly joined should be considered as so joined unless otherwise stated. The alternatives to be considered are:

- Alternative 1 (no project, ie. no fishery, alternative). Under this alternative, the commercial harvest of herring would be prohibited.
- Alternative 2 (existing regulations). Under this alternative, existing regulations would be modified only by adjusting quotas to reflect current biomass estimates and by adjusting dates to reflect changes in the calendar.
- Alternative 3 (individual vessel quota for gill net vessels in herring roe fishery). Under this alternative the proposed regulations would be modified by establishing an individual vessel quota for all gill net vessels. The proposed individual gill net vessel quota would equal the overall gill net quota divided by the number of permittees using gill net gear.

The following section states the specific purpose of the alternatives and summarizes the factual basis for determining that the alternatives are reasonably necessary.

2.4.1 Alternative 1 (no project)

This is a CEQA required alternative. It provides a reference for comparison to the proposed project and alternatives 2 and 3.

2.4.2 Alternative 2 (existing regulations)

The existing regulations for the commercial herring fishery are for the 1999-2000 season. This alternative would apply those 1999-2000 season regulations to the 2000-01 season, with changes in the quotas to reflect current biomass estimates and changes in season dates to reflect annual changes in the calendar. None of the other amendments to the regulations contained in the proposed project would be considered.

2.4.3 Alternative 3 (individual vessel quota)

This alternative would establish an individual herring quota for each San Francisco Bay gill net permittee. Under existing regulations [Section 163(g)(4)(C), Title 14, CCR] an overall herring quota is established for each of three gill net groups (platoons) in San Francisco Bay, allowing individual permittees to take and land as much fish (tonnage) as they are capable of until the overall quota for their respective group is reached. An individual permit quota has been suggested each season for the past several years. However, there has never been a clear consensus of support or opposition among industry members about this issue. See section 2.4.3 of the Final Environmental Document for a full description of this alternative.

Chapter 3. ENVIRONMENTAL SETTING

3.1 General

A thorough description of the environmental setting is provided in Chapter 3 of the Final Environmental Document, including Pacific herring life history, ecology, status of stocks, and fisheries, and biological and environmental descriptions of herring fishery locations (Crescent City area, Humboldt Bay, Tomales Bay, San Francisco Bay, Monterey Bay). A general description of Pacific herring life history, ecology, stock status, and fisheries is also presented below.

Pacific herring, *Clupea pallasii*, are found throughout the coastal zone from northern Baja California on the North American coast, around the rim of the North Pacific Basin to Korea on the Asian coast (Outram and Humphreys 1974, Hart 1973). In California, herring occur offshore at open ocean feeding grounds. From November through March, schools of adult herring migrate inshore to bays and estuaries to spawn. The largest spawning aggregations occur in San Francisco and Tomales bays with peak spawning in January. At first, schools hold in deep water to ripen (gonadal maturation) for up to two weeks, then move into shallow areas to spawn.

It is during spawning season that most of the harvest of herring occurs. The sac roe fisheries harvest herring as they move in to the shallows to spawn, when the eggs in the females are ripest. The product from this fishery is the roe (eggs) in the females. These fisheries occur in the Crescent City area, Humboldt Bay, Tomales Bay, and San Francisco Bay. The roe-on-kelp fishery hangs giant kelp, *Macrocystis pyrifera*, from rafts, for herring to spawn on. The product in this fishery is the egg-coated kelp. This fishery takes place in San Francisco Bay. The only existing ocean fishery occurs during the non-spawning season in Monterey Bay. Small fisheries for fresh fish occur during the non-spawning season in Tomales and San Francisco Bays.

Spawning occurs in the intertidal and shallow subtidal zones. Pacific herring males release milt into the water column while females extrude adhesive eggs on a variety of surfaces including vegetation, rocks, and man-made structures such as pier pilings. Embryos (fertilized eggs) typically hatch in about ten days, depending on water temperature. Larval

herring metamorphose into juvenile herring in about ten to twelve weeks. In San Francisco Bay, juvenile herring typically stay in the Bay through summer, then migrate out to sea.

Herring are a food source for many species of birds, fish, invertebrates, and mammals. Predation is particularly high during spawning when adult fish and eggs are concentrated and available in shallow areas. Predation during the egg stage is a significant cause of natural mortality.

The Pacific herring roe fishery in California has been intensively regulated since its inception in 1973. Estimates of the spawning population have provided the major source of information used to set fishery quotas to control the harvest of herring and provide for the long-term health of the herring resource. Annual estimates of spawning biomass are made in Tomales Bay using egg deposition surveys. In San Francisco Bay, spawning biomass is estimated annually using egg deposition surveys and hydroacoustic surveys. In addition to these estimates of spawning biomass, the Department also collects age composition data on the population as well as the fishery, and assesses the strength of each year's young-of-the-year herring. All of this information is used to assess the status of the population.

3.2 Status of the San Francisco Bay Spawning Population

The 1999-2000 spawning biomass estimate for San Francisco Bay is 27,400 tons (including catch), a 31.5% decline from last season's estimate, and close to half of the 22-year average of 53,678 tons. Although favorable ocean conditions have returned since the 1997 El Niño, spawning biomass remains low. As with other short-lived pelagic fish populations, Pacific herring population size fluctuates widely due to variations in year-class strength (the number of fish at age) (Table 3.1). The once very strong 1994 and 1995 year classes (6- and 5-year-old fish, respectively) appeared in much lower numbers than expected, apparently due to increased mortality. In addition, poor recruitment of 2- and 3-year-old herring also contributed to this year's low spawning biomass estimate. An index of abundance for herring young-of-the-year indicates that 2-year-old recruits next season (i.e., the 1999 year class) may be weak. Despite low spawning biomass and weakened age structure, ocean conditions have been favorable and the health of herring returning to San Francisco Bay was good during the 1999-2000 season. The weight of herring at any given length or age is at or above expected levels, which indicates that individual fish condition has recovered from some of the negative effects of the 1997-98 El Niño.

**Table 3.1. Estimated Numbers (x 1,000) of Herring-at-Age in the San Francisco Bay
Spawning Population, 1982-83 to present**

<u>Age</u>									
<u>Season</u>	1	2	3	4	5	6	7	8	9
82-83	NA	87,908	149,971	182,936	118,040	30,478	17,177	8,121	797
%		14.8	25.2	30.7	19.8	5.1	2.9	1.4	0.1
83-84	NA	332,699	69,654	92,565	73,840	17,306	1,168	117	0
%		56.6	11.9	15.8	12.6	2.9	0.2	0	0
84-85	NA	184,695	190,998	46,613	22,153	25,914	6,652	688	0
%		38.7	40.0	9.8	4.6	5.4	1.4	0.1	0
85-86	NA	162,422	160,613	126,535	26,790	16,038	7,752	717	182
%		32.4	32.1	25.3	5.3	3.2	1.5	0.1	0
86-87	NA	168,962	194,365	134,528	64,598	9,182	6,175	1,065	246
%		29.2	33.6	23.2	11.2	1.6	1.1	0.2	0
87-88	NA	233,193	292,508	136,604	66,494	25,337	5,027	3,939	0
%		30.6	38.3	17.9	8.7	3.3	0.7	0.5	0
88-89	NA	146,525	222,058	139,906	44,435	12,310	3,030	534	0
%		25.8	39.0	24.6	7.8	2.2	0.5	0.1	0
89-90	NA	294,631	237,377	136,248	84,361	23,970	6,572	0	0
%		37.6	30.3	17.4	10.8	3.1	0.8	0	0
90-91	NA - incomplete data								
91-92	1,356	13,666	126,016	206,930	82,870	23,764	3,490	0	0
%	0.3	3.0	28.0	45.2	18.1	5.2	0.8	0	0
92-93	NA	48,925	50,398	79,045	51,713	8,642	0	0	0
%		20.5	21.1	33.1	21.7	3.6	0	0	0
93-94	11,485	22,403	134,870	160,335	63,331	25,926	4,808	355	0
%	2.6	5.1	31.0	36.9	14.6	6.0	1.1	0.08	0
94-95	2,276	39,363	236,783	94,833	42,850	18,223	3,196	0	0
%	0.5	9.0	54.1	21.7	9.8	4.2	0.7	0	0

Table 3.1 (continued). Estimated Numbers of Herring at Age in the San Francisco Bay Spawning Population, 1982-83 to present.									
<u>Age</u>									
<u>Season</u>	1	2	3	4	5	6	7	8	9
95-96	3,142	483,164	359,357	282,069	81,768	28,904	1,687	0	0
%	0.3	38.9	29.0	22.7	6.6	2.3	0.1	0	0
96-97	1,184	290,497	359,459	183,370	120,029	33,098	8,935	270	0
%	0.1	29.1	36.0	18.4	12.0	3.3	0.9	0.02	0
97-98	42	45,092	129,411	65,637	18,724	2,259	1,430	0	0
%	0.01	17.2	49.3	25.0	7.1	0.9	0.5	0	0
98-99	1,931	256,816	54,306	114,835	56,915	9,729	558	978	^a
% ^b	0	52	11	23	11	2	0	0	^a
99-00 ^c	0	93,457	151,322	53,648	24,944	2,654	101	0	0
%	0	28.7	46.4	16.5	7.6	0.8	0	0	0
^a Age 9 fish not included in age assigning program this season.									
^b Decimal place not included in age assigning program this season.									
^c Preliminary - based on fish lengths.									

3.3 Status of the Tomales Bay Spawning Population

The 1999-2000 spawning biomass estimate for Tomales Bay is 2,011 tons and is about one-half of last season's 4,069 ton biomass. While the 1999-2000 season biomass estimate is well below the 25-year long-term average of 4,777 tons, it was only 25 percent less than the 7-year average of 2,678 tons since the Tomales Bay herring fishery re-opened in the 1992-93 season. Preliminary aging of Tomales Bay herring suggests that reduced growth of herring in offshore waters and loss of older fish from the spawning population has resulted in a mean length of herring in the commercial catch below the 5-year average. However, for the past three seasons, the Tomales Bay landings have been far below the Department established quotas. While the Department conservatively sets Tomales Bay initial quotas at 10 percent of the previous season's spawning biomass, fishery harvests have not been more than 2.1 percent since the 1997-98 season.

3.4 Status of the Humboldt Bay and Crescent City Spawning Populations

No surveys of spawning biomass have been conducted in Humboldt Bay since the 1990-91 season when an estimated 400 tons spawned. Based on that estimate, a 60-ton quota has been allocated each season to the present. However, fishermen have observed a decline in the amount of herring spawning in Humboldt Bay over the last twelve years, and only one permit of the four issued for Humboldt Bay have been actively fished in the last three seasons. The Department plans to conduct surveys of spawning biomass for the 2000-01 season in Humboldt Bay, to update the status of this population.

Individual spawning runs have been surveyed in Crescent City harbor, but no seasonal spawning biomass estimates have ever been made for the area. Three permits exist for this fishery but none were fished during the 1999-2000 season.

3.5 San Francisco Bay Fishery Mesh Size Study

Prior to the 1999-2000 Pacific herring season, the Department, in consultation with the Director's Herring Advisory Committee, proposed a study to examine the size and age composition of herring caught in gill nets of varying mesh sizes within San Francisco and Tomales bays. To facilitate this study the Fish and Game Regulations (Section 163, Division 1, Title 14) were revised to allow four herring fishing vessels in each location to fish with gill nets with mesh lengths below the legal mesh length limit of 2 1/8 inch. The principal study objective was to evaluate the catch differences between a gill net mesh length of 2 1/16 and the present legal mesh length limit of 2 1/8 inches, and determine the age composition in regards to meeting the Department's herring fishery management objective which concentrates the fishing efforts at the four-year old age class or above. The study design, sampling procedures, and participant selection criteria were all developed through consultation with interested parties, including Department biologists, herring fisherman, and academic researchers.

Due, in part, to the low Tomales Bay catch rates in recent years, no Tomales Bay fishers participated in the study during the 1999-2000 Pacific herring season. However, four fishers did participate in the study in the San Francisco Bay fishery. The preliminary results of the San Francisco Bay Pacific Herring Gill Net Mesh Size Study for the 1999-2000 season

are presented in Tables 3.2 through 3.5. Due to the low spawning biomass population during the 1999-2000 Pacific herring season, the data collected during the San Francisco Bay study was limited. The Department proposes to continue the San Francisco Bay study during the 2000-01 Pacific herring season.

**Table 3.2 San Francisco Bay 1999-2000 Pacific Herring Gill Net Mesh Size Study
Preliminary Week One Landings Analysis (Jan. 2-7, 2000)**

Date	Total Landed (lbs.)	Total Landed 2 1/8 in. (lbs.)	Total Landed 2 1/16 in. (lbs.)	Percent Roe (2 1/8 inch)	Percent Roe (2 1/16 inch)	Fish Count Per 10Kg (2 1/8 inch)	Fish Count Per 10Kg (2 1/16 inch)
1/3/00	712	281	431	0.155	0.153	88	95
1/5/00	1319	376	942	0.127	0.112	93	92
1/4/00	8303	3338	4965	0.162	0.127	83	89
1/4/00	18425	8139	10286	0.127	0.132	84	92
1/7/00	1205	327	878	0.175	0.132	84	90
Average	5992.8	2492.2	3500.4	0.15	0.13	86.4	91.6

**Table 3.3 San Francisco Bay 1999-2000 Pacific Herring Gill Net Mesh Size Study
Preliminary Week Two Landings Analysis (Jan. 16-21, 2000)**

Date	Total Landed (lbs.)	Total Landed 2 1/8 in. (lbs.)	Total Landed 2 1/16 in. (lbs.)	Percent Roe (2 1/8 inch)	Percent Roe (2 1/16 inch)	Fish Count Per 10Kg (2 1/8 inch)	Fish Count Per 10Kg (2 1/16 inch)
1/20/00	2,420	1,311	1,109	0.148	0.136	90	93
Average	2,420	1,311	1,109	0.15	0.14	90	93

Table 3.4 San Francisco Bay 1999-2000 Pacific Herring Gill Net Mesh Size Study
Preliminary Percent Roe as Weighted Average 2 1/8 Inch Mesh

- Week One (Jan. 2-7, 2000) -

Date	Total Landed 2 1/8 in. (lbs.)	Percent Roe 2 1/8 inch	Weighted Average Percent Roe 2 1/8 inch
1/3/00	281	0.16	
1/5/00	376	0.13	
1/4/00	3,338	0.16	
1/4/00	8,139	0.13	
1/7/00	327	0.18	
Average	12,461	0.15	0.14

Table 3.5 San Francisco Bay 1999-2000 Pacific Herring Gill Net Mesh Size Study
Preliminary Percent Roe as Weighted Average 2 1/16 Inch Mesh

- Week One (Jan. 2-7, 2000) -

Date	Total Landed 2 1/16 in. (lbs.)	Percent Roe 2 1/16 inch	Weighted Average Percent Roe 2 1/16 inch
1/3/00	431	0.15	
1/5/00	942	0.11	
1/4/00	4965	0.13	
1/4/00	10286	0.13	
1/7/00	878	0.13	
Average	17502	0.13	0.13

Chapter 4. ENVIRONMENTAL IMPACT ANALYSIS AND CUMULATIVE EFFECTS

This chapter addresses the impacts and cumulative effects of the proposed project (changes to the commercial herring fishing regulations) on the existing environment described in Chapter 3 of this document and the FED. The proposed project and two of the three alternatives will permit a continuation of the regulated commercial harvest of Pacific herring in California. An analysis of the impacts of the proposed project and its cumulative effects identified no new impacts that were not already addressed in the FED.

Existing regulations permit the commercial harvest of herring in five geographical areas: San Francisco Bay, Tomales Bay, Humboldt Bay, the Crescent City area, and the open ocean. Chapter 4 of the FED examined the environmental sensitivity of each of these areas at existing harvest levels. Thirteen environmental categories were considered, including: land use, traffic circulation, water quality, air quality, housing, public utilities, geological, biological, archaeological, scenic, recreation, noise, and growth inducement. Three categories (land use, archaeology, and growth inducement) were considered to have no environmental sensitivity to commercial herring fishery activity in any of the five geographical areas and were not considered in the impact analysis. The basis for this assessment is provided in detail in section 4.1 of the FED.

Section 4.2 of the FED provided a detailed impact analysis for the ten categories found to have environmental sensitivity to commercial herring fishery activity. Potential impacts to traffic circulation, water quality, air quality, housing and utilities, geology, and scenic, recreation, and noise that were identified as an aspect of herring fisheries varied in degree with geographic area, but all were considered to be localized, short-term, and less than significant. Some of these potential impacts are mitigated by various existing regulations.

Section 4.2.6 of the FED provided a detailed analysis of the potential environmental impacts to biological resources that exist from commercial herring fisheries. The proposed project adds no new impacts to be analyzed. The FED divided potential impacts into two categories: (1) direct harvest impacts; and (2) trophic level impacts. Short and long term potential adverse impacts exist within each of these categories. Many of these potential

impacts are mitigated by current management practices including annual stock assessments and regulations that control harvest and fishery impacts. Others are considered localized, short-term and less than significant.

Chapter 5 of the FED provided a detailed analysis of the factors that have the capacity to influence future Pacific herring population status in California in addition to the existing herring fisheries or alternatives (cumulative effects). The proposed project introduces no new cumulative effects to those addressed by the FED. The FED discussed in detail the factors with greatest potential for cumulative effects, including: continued commercial harvest of herring, unusual biological events, competitive interactions with other pelagic fish, unusual weather events, habitat loss, and water quality. Mitigation for these potential cumulative effects will be provided by annual stock assessments, annual changes in the level of harvest, or the selection of a no fishery alternative.

Chapter 5. ANALYSIS OF ALTERNATIVES

An analysis of the potential environmental impacts of the three alternatives described in section 2.4 is provided in Chapter 6 of the Final Environmental Document. The three commercial harvest alternatives were selected for consideration by the Commission based on Department consideration, public comment received during the normal review process, or in response to the Notice of Preparation (NOP). These alternatives were selected to provide the Commission with a range of commercial harvest alternatives. The two commercial harvest alternatives contain common elements with only selected elements of the management framework considered as alternatives. A "no project" (no commercial harvest of herring) alternative is also provided.

5.1 Alternative 1 (no project)

The "no project" alternative would eliminate commercial harvest from the Pacific herring resource management framework. Selection of this alternative would be expected to: (1) reduce total mortality and allow herring stocks to increase to carrying capacity; (2) reduce the health of stocks through density dependent intraspecific interactions; (3) increase interspecific competition and reduce standing crops of closely related species; (4) increase the availability of herring to predators by reducing search effort and increasing capture success; (5) eliminate the ethical concern of those opposed to the commercial harvest of herring; (6) eliminate the scientific information on herring derived from sampling the commercial harvest; (7) eliminate revenues to local and regional economies and State and Federal agencies derived from the commercial harvest of herring.

Localized, short-term, and less than significant impacts to traffic circulation, water quality, air quality, housing, utilities, scenic quality, recreational opportunities, and noise levels would be eliminated. Section 6.1 of the FED provides a full analysis of the potential impacts associated with this alternative.

5.2 Alternative 2 (existing regulations)

Existing regulations, adopted in 1999, are for the 1999-2000 Pacific herring commercial fishing season. Under alternative 2, the only changes to the 1999-2000 regulations (existing regulation) would be to seasons and quotas, to adjust them to the current calendar and biomass estimates, respectively. In most regards, the environmental impacts of alternative 2 will be similar to those of the proposed project. However, alternative 2 does not address additional problems or conditions that are addressed by the proposed project. Some of the changes and amendments in the proposed project address harvesting requirements, permittee qualifications, permit suspensions, notification and/or administrative issues, eggs-on-kelp fishery issues, or are simply clarification changes and are without apparent environmental implications.

5.3 Alternative 3 (individual vessel quota)

This alternative modifies alternative 2 by establishing individual boat quotas for the herring roe gill net fishery in San Francisco Bay. Localized, short-term, and less than significant impacts of this alternative to traffic circulation, water quality, air quality, housing, utilities, scenic quality, recreational opportunities, and noise levels are expected to be comparable to the proposed project. However, fishing effort could extend further into the season since the economic incentive would direct effort toward higher quality rather than quantity. Without individual boat quotas, overall quotas have typically been met long before season closure. Having the latitude to strive for higher quality could add incrementally to most impacts. Section 6.3 of the FED provides further analysis of the potential environmental impacts of this alternative.

5.4 Proposed Project

The proposed project (described in full in Chapter 2 of this FSED) is a body of recommended regulations governing the commercial harvest of herring for roe products, the harvest of herring eggs-on-kelp, and the harvest of herring for fresh food, bait, and pet food. The proposed project is identified as the preferred alternative because it provides a set of regulations most likely to achieve the State's policy with respect to the conservation, maintenance and utilization of the Pacific herring resource.

Chapter 6. CONSULTATION

Chapter 7 of the FED explains the role that consultation with other agencies, professionals, and the public plays in the Department's marine resource management programs.

Consultations also occur during the annual review of regulations guiding the commercial harvest of herring. The process began this year when the Department presented the results of its annual population assessment and discussed possible regulatory changes for the 1999-2000 season with the Director's Herring Advisory Committee on March 23, 1999.

The Department's recommendations were modified, as necessary, based on the Committee's comments, and presented at a public hearing on April 7, 1999. This meeting also served as a scoping session for the content of the DSED. The recommendations were again modified, as necessary, based on information and comments received during the public hearing, and will be presented to the Fish and Game Commission.

Prior to preparation of the DSED, the Department initiated a broader consultation by distributing a Notice of Preparation (NOP) that announced the intent to prepare the document. The NOP requested submittal of views on the scope and content of the environmental information to be contained therein. The notice was distributed to members of the public and interested organizations that had expressed prior interest in herring management. The NOP was also provided to the State Clearinghouse for distribution to appropriate responsible and trustee agencies.

Every effort has been made to consider relevant issues brought forth in response to the NOP in the draft supplemental environmental document, including development of alternatives to the proposed project.

Chapter 7. Responses to Comments Regarding the Proposed Project

Pursuant to Sections 2180.5(d)(2)(vi) and 2180.5(d)(3)(ii) of the Public Resources Code, a copy of the Draft Supplemental Environmental Document was placed on file and made available for public review for a 45-day period. Notice was also given at the time of filing that any person interested could submit statements in writing relevant to the environmental document until 5:00 p.m. on August 4, 2000, at the Fish and Game Commission office in Sacramento. Written and oral comments relative to the draft supplemental environmental document were also solicited by the Commission at its August 4, 2000 meeting in San Luis Obispo.

7.1 Summary of Comments Received

No oral or written comments regarding the Draft Environmental Document were received by the Department during the public review period.

7.2 Department Response to Comments

Not applicable.

7.3 Copy of Letters Received

None received.

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