Agenda Item H.1
Situation Summary
November 2010

INITIAL CONSIDERATION OF REVISIONS TO THE GROUNDFISH BIENNIAL MANAGEMENT PROCESS

Beginning in 2004 the Council has, every other year, gone through the decision-making process needed to set biennial groundfish harvest specifications and management measures for the next 2-year period. The biennial process displaced an annual process that was viewed as untenable due to a two-meeting process encompassing the September and November Council meetings, with only 6 weeks between the Council meetings and only 6 weeks between the November Council meeting and the January 1 start of the fishing year. Since 2004, the biennial process has become increasingly complex and time-consuming for a variety of reasons. As a result it has become difficult to get new management measures, in the form of Federal regulations implemented by January 1, the start of the management period. These difficulties are evidenced by the delayed implementation of regulations at the start of the 2009-2010 cycle (implemented March 1, 2009). The process for the 2011-2012 cycle has again proved challenging: the lengthy Council floor and Groundfish Management Team (GMT) sessions at the April and June Council meetings and severe workload difficulties after the June Council meeting are example symptoms of a process not working well. There are various situational reasons for some of the current cycle difficulties, such as the simultaneous implementation of the new management frameworks contained in Amendments 20, 21, and 23; the need to develop a new rebuilding plan for petrale sole and reevaluate existing rebuilding plans; and the need to respond to a court ruling just before the June Council meeting. However, it also seems apparent there are underlying process issues that have been part of every recent biennial cycle that create difficulties.

Very broadly, the biennial process may be divided into two overlapping components and associated areas of responsibility. First, is the Council decision-making process as described in the Groundfish Fishery Management Plan (FMP) modified by Amendment 17 (Agenda Item H.1.a, Attachment 1), which begins in June of the odd year with initial planning and stock assessment approvals, and culminates the following June when the Council takes final action on a package of harvest specifications and management measures. The second component involves submitting the Council decision to the National Marine Fisheries Service (NMFS) for the Secretarial review process and eventual implementation in Federal regulations and in some years, amendments to the FMP. While the specifics of this phase depend on the nature of the action, a variety of applicable laws establish parallel processes NMFS must coordinate in order to implement the action. Examples of concurrent processes include the Magnuson-Stevens Act process, the National Environmental Policy Act process, and the Administrative Procedures Act process; all have timelines of different length and different necessities. Also, the Council's regulatory deeming process is now part of the post-June Council meeting process.

In response to the voluminous difficulties in the 2011-12 cycle, Council staff, in consultation with our partners at NMFS, proposes that the Council engage in a comprehensive review of how the biennial process works, towards a goal of recommending improvements. To facilitate the Council's consideration of procedural changes to the biennial process, Council staff has prepared a draft white paper (Agenda Item H.1.a, Supplemental Attachment 2). It provides a problem description, presents initial analysis of some key problem areas, and lays out alternatives for possible changes with a view towards making the process more efficient, transparent, and timely. Some alternatives focus on improvements that can be implemented in time for the 2013-2014 biennial cycle, which is scheduled to begin in June 2011. The draft white paper also considers conceptual solutions that may require an amendment to the groundfish FMP, something not accomplishable by June 2011. In considering improvements to the groundfish biennial management process, it is envisioned the Council will consider the initial draft white paper at this meeting, provide direction for further analysis over the winter, and consider a complete draft white paper at its April 2011 meeting for a decision on changes in the 2013-2014 cycle beginning at the June 2011 Council meeting, as well as a decision on whether to pursue changes for the long term that may require an FMP amendment.

In situations like this in the past, it has been useful to establish an ad hoc workgroup to help in the appropriate analytical tasks. At this meeting, the Council should consider appointing a small ad hoc workgroup for this purpose. Candidate membership includes representatives of the GMT, the Northwest Region, and the Groundfish Advisory Subpanel.

Under this agenda item, the Council should review the draft white paper, consider public and advisory body comments, and make recommendations to direct further efforts.

Council Action:

Consider and discuss the Council staff draft white paper alternatives for improving the harvest specifications and management measures process and direct further efforts.

Reference Materials:

1. Agenda Item H.1.a, Attachment 1: Relevant Excerpts from the Groundfish Fishery Management Plan.
2. Agenda Item H.1.a, Supplemental Attachment 2: Initial Consideration of Revisions to the Groundfish Biennial Harvest Specifications and Management Measures Process.

Agenda Order:

a. Agenda Item Overview **Kelly Ames**
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Review White Paper Recommendations and Direct Further Efforts

PFMC
10/18/10

Z:\!PFMC\MEETING\2010\November\Groundfish\H1_Sitsum_Spex-Nov10.Docx

5.0 PERIODIC SPECIFICATION AND APPORTIONMENT OF HARVEST LEVELS

The ability to establish and adjust harvest levels is the first major tool at the Council's disposal to exercise its resource stewardship responsibilities. Each biennial fishing period, the Council will assess the biological, social, and economic condition of the Pacific Coast groundfish fishery and update maximum sustainable yield (MSY) estimates or proxies for specific stocks (management units) where new information on the population dynamics is available. The Council will make this information available to the public in the form of the *Stock Assessment and Fishery Evaluation (SAFE)* document described in Section 5.1. Based upon the best scientific information available, the Council will evaluate the current level of fishing relative to the MSY level for stocks where sufficient data are available. Estimates of the acceptable biological catch (ABC) for major stocks will be developed, and the Council will identify those species or species groups which it proposes to be managed by the establishment of numerical harvest levels (optimum yields [OYs], harvest guidelines [HGs], or quotas). For those stocks judged to be below their overfished/rebuilding threshold, the Council will develop a stock rebuilding management strategy.

The process for specification of numerical harvest levels includes the estimation of ABC, the establishment of OYs for various stocks, and the calculation of specified allocations between harvest sectors. The specification of numerical harvest levels described in this chapter is the process of designating and adjusting overall numerical limits for a stock either throughout the entire fishery management area or throughout specified subareas. The process normally occurs biennially between November and June, but can occur under specified circumstances, at other times of the fishing year. The Council will identify those OYs which should be designated for allocation between limited entry and open access sectors of the commercial industry. Other numerical limits which allocate the resource or which apply to one segment of the fishery and not another would be imposed through one of the management measures processes at either 6.2 C or D in Chapter 6.

The National Marine Fisheries Service (NMFS) Regional Administrator will review the Council's recommendations, supporting rationale, public comments, and other relevant information; and, if it is approved, will undertake the appropriate method of implementation. Rejection of a recommendation will be explained in writing.

The procedures specified in this chapter do not affect the authority of the U.S. Secretary of Commerce (Secretary) to take emergency regulatory action as provided for in Section 305(c) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) if an emergency exists involving any groundfish resource or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(d) of the Magnuson-Stevens Act.

This chapter describes the steps in this process.

[Amended: 5, 12, 16-1, 17, 18]

5.1 General Overview of the Harvest Specifications and Management Process

The specifications and management process, in general terms, occurs as follows:

1. The Council will determine the MSY or MSY proxy and ABC for each major stock. Typically, the MSY proxy will be in terms of a fishing mortality rate ($F_{x\%}$,) and ABC will be the $F_{x\%}$ applied to the current biomass estimate. The MSY is the maximum long-term average yield expected from annual application of the MSY (or proxy) harvest policy under prevailing

ecological and environmental conditions.

2. Every species will either have its own designated OY or be included in a multispecies OY. Species which are included in a multispecies OY may also have individual OYs, have individual HGs, or be included in a HG for a subgroup of the multispecies OY. Stocks without quantitative or qualitative assessment information may be included in a numerical or non-numerical OY.

3. To determine the OY for each stock, the Council will determine the best estimate of current abundance and its relation to its precautionary and overfished thresholds. If the abundance is above the precautionary threshold, OY will be equal to or less than ABC. If abundance falls below the precautionary threshold, OY will be reduced according to the harvest control rule for that stock. If abundance falls below the overfished/rebuilding threshold, OY will be set according to the interim rebuilding rule until the Council develops a formal rebuilding plan for that species.

4. For any stock or stock complex where the Secretary identifies that overfishing is occurring, the Council will take remedial action to end overfishing and prevent the stock or stock complex from falling below the minimum stock size threshold. For any stock the Secretary has declared overfished or approaching the overfished condition, or for any stock the Council determines is in need of rebuilding, the Council will implement such periodic management measures as are necessary to rebuild the stock by controlling harvest mortality, habitat impacts, or other effects of fishing activities that are subject to regulation under this biennial process. These management measures will be consistent with any approved rebuilding plan.

5. The Council may reserve and deduct a portion of the ABC of any stock to provide for compensation for vessels conducting scientific research authorized by NMFS. Prior to the research activities, the Council will authorize amounts to be made available to a research reserve. However, the deduction from the ABC will be made in the year after the Acompensation fishing@; the amounts deducted from the ABC will reflect the actual catch during compensation fishing activities.

6. The Council will identify stocks which are likely to be fully harvested (i.e., the ABC, OY, or HG achieved) in the absence of specific management measures and for which allocation between limited entry and open access sectors of the fishery is appropriate.

7. The groundfish resource is fully utilized by U.S. fishing vessels and seafood processors. The Council may entertain applications for foreign or joint venture fishing or processing at any time, but fishing opportunities may be established only through amendment to this FMP. This section supersedes other provisions of this FMP relating to foreign and joint venture fishing.

[Amended: 5, 12, 16-1, 17]

5.2 SAFE Document

For the purpose of providing the best available scientific information to the Council for evaluating the status of the fisheries relative to the MSY and overfishing definition, developing ABCs, determining the need for individual species or species group management, setting and adjusting numerical harvest levels, assessing social and economic conditions in the fishery, and updating the appendices of this fishery management plan (FMP); a SAFE document is prepared annually. Not all species and species groups can be reevaluated every year due to limited state and federal resources. However, the SAFE document will in general contain the following information:

1. A report on the current status of Washington, Oregon, and California groundfish resources by major species or species group.

2. Specify and update estimates of harvest control rule parameters for those species or species groups for which information is available. (The Council anticipates scientific information about the population dynamics of the various stocks will improve over time and that this information will result in improved estimates of appropriate harvest rates and MSY proxies. Thus, initial default proxy values will be replaced from time to time. Such changes will not require amendment to the FMP, but the scientific basis for new values must be documented.)

3. Estimates of MSY and ABC for major species or species groups.

4. Catch statistics (landings and value) for commercial, recreational, and charter sectors.

5. Recommendations of species or species groups for individual management by OYs.

6. A brief history of the harvesting sector of the fishery, including recreational sectors.

7. A brief history of regional groundfish management.

8. A summary of the most recent economic information available, including number of vessels and economic characteristics by gear type.

9. Other relevant biological, social, economic, ecological, and essential fish habitat information which may be useful to the Council.

10. A description of the maximum fishing mortality threshold (MFMT) and the minimum stock size threshold (MSST) for each stock or stock complex, along with other information the Council may use to determine whether overfishing is occurring or a stock or stock complex is overfished. (The default overfished/rebuilding threshold for category 1 groundfish is $0.25B_{unfished}$. The Council may establish different thresholds for any species based on information provided in stock assessments, the SAFE document, or other scientific or groundfish management-related report.)

11 A description of any rebuilding plans currently in effect, a summary of the information relevant to the rebuilding plans, and any management measures proposed or currently in effect to achieve the rebuilding plan goals and objectives.

12. A list of annual specifications and management measures that have been designated as routine under processes described in the FMP at Section 6.2.

Under a biennial specifications and management measures process, elements 2, 5, 6, 7, and 11 would not need to be included in a SAFE document in years when the Council is not setting specifications and management measures for an upcoming biennial fishing period. The stock assessment section of the SAFE document is normally completed when the most current stock assessment and fisheries performance information is available and prior to the meeting at which the Council approves its final management recommendations for the upcoming biennial fishing period. The Council will announce the availability of the stock assessment section of the SAFE document to the public by such means as mailing lists or newsletters, and will provide copies upon request. The fishery evaluation section of the SAFE may be prepared after the Council has made its final recommendations for the upcoming biennial fishing period and will include the final recommendations, an estimate of the previous year's catch, and including summaries of rebuilding plans. Availability will be similarly announced and copies made available upon request.

[Amended: 5, 12, 13, 16-1, 17]

5.3 Authorization and Accounting for Fish Taken as Compensation for Authorized Scientific Research Activities.

At a Council meeting, NMFS will advise the Council of upcoming resource surveys that would be conducted using private vessels with groundfish as whole or partial compensation. For each proposal, NMFS will identify the maximum number of vessels expected or needed to conduct the survey, an estimate of the species and amounts of compensation fish likely to be needed to compensate vessels for conducting the survey, when the fish would be taken, and when the fish would be deducted from the ABC in determining the OY/harvest guideline. NMFS will initiate a competitive solicitation to select vessels to conduct resource surveys. NMFS will consult with the Council regarding the amounts and types of groundfish species to be used to support the surveys. If the Council approves NMFS' proposal, NMFS may proceed with awarding the contracts, taking into account any modifications requested by the Council. If the Council does not approve the proposal to use fish as compensation to pay for resource surveys, NMFS will not use fish as compensation.

Because the species and amounts of fish used as compensation will not be determined until the contract is awarded, it may not be possible to deduct the amount of compensation fish from the ABC or harvest guideline in the year that the fish are caught. Therefore, the compensation fish will be deducted from the ABC the year or biennial fishing period after the fish are harvested. During the specification and management measures process, NMFS will announce the total amount of fish caught during the year or biennial fishing period as compensation for conducting a resource survey, which then will be deducted from the following year's ABCs in setting the OYs.

[Amended: 11, 17]

5.4 Biennial Implementation Procedures for Specifications and Management Measures

Biennially, the Council will develop recommendations for the specification of ABCs, OYs, and any HGs or quotas over the span of three Council meetings. In addition during this process, the Council may recommend establishment of HGs and quotas for species or species groups within an OY. Depending on stock assessment availability and fishery management interactions with Canada, the Council may also develop recommendations for the specification of the Pacific whiting ABC/OY and quotas in a separate, annual process.

The Council will develop preliminary recommendations at the first of three meetings (usually in November) based upon the best stock assessment information available to the Council at the time and consideration of public comment. After the first meeting, the Council will provide a summary of its preliminary recommendations and their basis to the public through its mailing list as well as providing copies of the information at the Council office and to the public upon request. The Council will notify the public of its intent to develop final recommendations at its third meeting (usually in June) and solicit public comment both before and at its second meeting.

At its second and/or third meeting, the Council will again consider the best available stock assessment information which should be contained in the recently completed SAFE report and consider public testimony before adopting final recommendations to the Secretary. Following the third meeting, the Council will submit its recommendations along with the rationale and supporting information to the Secretary for review and implementation.

Upon receipt of the Council's recommendations supporting rationale and information, the Secretary will review the submission, and, if it is sufficient for public review, publish a proposed rule in the *Federal Register*, making the Council's recommendations available for public comment and agency review. Following the public comment period on the proposed rule, the Secretary will review the proposed rule, taking into account any comments or additional information received, and will publish a final rule in the Federal Register, possibly modified from the proposed rule in accordance with the Secretary's consideration of the proposed rule. All ABCs, OYs, and any HGs or quotas will remain in effect until revised, and, whether revised or not, will be announced at the beginning of the biennial fishing period along with other specifications.

In the event that the Secretary disapproves one or more of the Council's recommendations, he may implement those portions approved and notify the Council in writing of the disapproved portions along with the reasons for disapproval. The Council may either provide additional rationale or information to support its original recommendation, if required, or may submit alternative recommendations with supporting rationale. In the absence of an approved recommendation at the beginning of the biennial fishing period, the current specifications in effect at the end of the previous biennial fishing period will remain in effect until modified, superseded, or rescinded.

[Amended: 5, 11, 17]

5.5 Inseason Procedures for Establishing or Adjusting Specifications

5.5.1 Inseason Adjustments to ABCs

Under the biennial specifications and management measures process, stock assessments for most species will become available every other year, prior to the November Council meeting that begins the three-meeting process for setting specifications and management measures. The November Council meeting that begins that three-meeting process will be the November of the first fishing year in a biennial fishing period. If the Council determines that any of the ABCs or OYs set in the prior management process are not adequately conservative to meet rebuilding plan goals for an overfished species, harvest specifications for that overfished species and/or for co-occurring species may be revised for the second fishing year of the then current biennial management period.

Beyond this process, ABCs, OYs, HGs, and quotas may only be modified in cases where a harvest specification announced at the beginning of the fishing period is found to have resulted from incorrect data or from computational errors. If the Council finds that such an error has occurred, it may recommend the Secretary publish a notice in the *Federal Register* revising the incorrect harvest specification at the earliest possible date.

5.5.2 Inseason Establishment and Adjustment of OYs, HGs, and Quotas

OYs and HGs may be established and adjusted inseason (1) for resource conservation through the "points

6.0 MANAGEMENT MEASURES

6.1 Introduction

The FMP, as amended, establishes the fishery management program, the process, and procedures the Council will follow in making adjustments to that program. It also sets the limits of management authority of the Council and the Secretary when acting under the FMP. The preceding two chapters describe the procedures for determining appropriate harvest levels and establishing them on a periodic basis. This chapter describes the procedures and methods that may be used to directly control fishing activities so that total catch of a given species or species group does not exceed specified harvest limits. It is organized around five major themes:

- Section 6.2 describes the procedures for establishing and adjusting management measures, including three decision-making frameworks the Council (in conjunction with its advisory bodies) uses to decide whether management measures need adjustment. These framework procedures allow management decisions, as long as they are consistent with the provisions of this FMP (including the frameworks), to be implemented via Federal regulation without first amending the FMP. This section also describes the procedures for promulgating the regulations needed to implement the management measures authorized by this FMP.

- Section 6.3 describes the criteria the Council will consider when establishing management measures intended to directly allocate harvest opportunity.

- Sections 6.4 and 6.5 describe methods to account for all sources of fishing mortality and to reduce bycatch, and especially bycatch mortality. Bycatch is defined in the Magnuson-Stevens Act as “fish which are harvested in a fishery, but which are not sold or kept for personal use, and includes economic discards and regulatory discards” (16 U.S.C. 1802(2)). Section 6.4 also describes those additional measures necessary to monitor and/or report on fishery catch and effort or to enforce regulations.

- Section 6.6 through 6.9 inventory the range of management measures available to the Council, as authorized by this FMP. Not all of these management measures will be implemented at any given time.

- Section 6.10 describes those requirements that support the enforcement of management measures.

These procedures, measures, and requirements must be consistent with the goals and objectives of the FMP, the Magnuson-Stevens Act, and other applicable law. All measures, unless otherwise specified, apply to all domestic vessels regardless of whether catch is landed and processed on shore or processed at sea. The procedures by which the Council develops recommendations on revising management measures, and by which NMFS implements those recommendations, are found in Section 6.2.

6.1.1 Overview of Management Measures for West Coast Groundfish Fisheries

In the early stages of fishery development, there is generally little concern with management strategies. As fishing effort increases, management measures become necessary to prevent overfishing and the resulting adverse biological, social and economic impacts. Although recruitment, growth, natural mortality, and fishing mortality affect the size of fish populations, fishery managers only have control over one of these factors—fishing mortality. The principal measures available to the Council to control fishing mortality of the groundfish fisheries in the Washington, Oregon, and California region are:

- Measures to reduce bycatch and bycatch mortality – described in 6.5.

- Defining authorized fishing gear and regulating the configuration and deployment of fishing gear, including mesh size in nets and escape panels or ports in traps—described in Section 6.6.

- Restricting catches by defining prohibited species and establishing landing, trip frequency, bag, and size limits—described in Section 6.7.

- Establishing fishing seasons and closed areas—described in Section 6.8

- Limiting fishing capacity or effort through permits, licenses and endorsements, and quotas, or by means of input controls on fishing gear, such as restrictions on trawl size/shape or longline length or number of hooks or pots—described in Section 6.9. Fishing capacity may be further limited through programs that reduce participation in the fishery by retiring permits and/or vessels.

Although this chapter only discusses in detail the types of management measures outlined above, the Council may recommend and NMFS may implement other useful management measures through the appropriate rulemaking process, as long as they are consistent with the criteria and general procedures contained in this FMP.

[Amendment 18]

6.2 General Procedures for Establishing and Adjusting Management Measures

This FMP establishes three framework procedures through which the Council is able to recommend the establishment and adjustment of specific management measures for the Pacific Coast groundfish fishery. The *points of concern framework* allows the Council to develop management measures that respond to resource conservation issues; the *socioeconomic framework* allows the Council to develop management measures in response to social, economic, and ecological issues that affect fishing communities. The *habitat conservation framework* allows the Council to modify the number, extent, and location of areas closed to bottom trawling in order to protect EFH. Criteria associated with each framework form the basis for Council recommendations, and Council recommendations will be consistent with them. The process for developing and implementing management measures normally will occur over the span of at least two Council meetings, with an exception that provides for more timely Council consideration under certain specific conditions.

The time required to take action under any framework will vary depending on the nature of the action, its impacts on the fishing industry, resource, and environment, and review of these impacts by interested parties. This depends on the range of biological, social, and economic impacts that may need to be considered at the time a particular change in regulations is proposed. Furthermore, other applicable law (e.g., the National Environmental Policy Act, Administrative Procedures Act, Regulatory Flexibility Act, relevant Executive Orders, etc.) may require additional analysis and public comment before measures may be implemented by the Secretary.

The Secretary will develop management measures recommended by the Council for review and public comment as publications in the *Federal Register*, either as notices or regulations. Generally, management measures of broad applicability and permanent effectiveness should be published as regulations. More narrowly applicable measures, which may only apply for short duration (one biennium or less) and may also require frequent adjustment, should be published as notices.

Management measures are normally imposed, adjusted, or removed at the beginning of the biennial fishing period, but may, if the Council determines it necessary, be imposed, adjusted, or removed at any time during the period. Management measures may be imposed for habitat protection, resource conservation, or social or economic reasons consistent with the criteria, procedures, goals, and objectives set forth in the FMP.

The NMFS Regional Administrator will review the Council's recommendation, supporting rationale, public comments, and other relevant information and determine whether to approve, disapprove, or partially approve the Council's recommendation. If the recommendation is approved, NMFS will implement the recommendation through regulation or notice, as appropriate. NMFS will explain any disapproval or partial disapproval of the recommendation to the Council in writing.

The procedures specified in this chapter do not affect the authority of the Secretary to take emergency regulatory action as provided for in Section 305(c) of the Magnuson-Stevens Act if an emergency exists involving any groundfish resource, or to take such other regulatory action as may be necessary to discharge the Secretary's responsibilities under Section 305(d) of the Magnuson-Stevens Act.

Four different categories of management actions are authorized by this FMP, each of which requires a slightly different process. Management measures may be established, adjusted, or removed using any of the four procedures. The four basic categories of management actions are described below.

A. Automatic Actions

The NMFS Regional Administrator may initiate automatic management actions without prior public notice, opportunity to comment, or a Council meeting. These actions are nondiscretionary, and the impacts must be reasonably accountable, based on previous application of the action or past analysis. Examples include fishery, season, or gear type closures when a quota has been projected to have been attained. The Secretary will publish a single notice in the *Federal Register* making the action effective.

B. Notice Actions Requiring at Least One Council Meeting and One *Federal Register* Notice

These include all management actions other than automatic actions. Notice actions may be nondiscretionary; they may be actions for which the scope of probable impacts has been previously analyzed.

These actions are intended to have temporary effect, and the expectation is that they will need frequent adjustment. They may be recommended at a single Council meeting, although the Council will provide as much advance information to the public as possible concerning the issues it will be considering at its decision meeting. The primary examples are those inseason management actions defined as routine according to the criteria in Section 6.2.1. These include, but are not limited to, trip landing and frequency limits and size limits for all commercial gear types and closed seasons for any groundfish species in cases where protection of an overfished or depleted stock is required and bag limits, size limits, time/area closures, boat limits, hook limits, and dressing requirements for all recreational fisheries. Previous analysis must have been specific as to species and gear type before a management measure can be defined as routine and acted on at a single Council meeting. If the recommendations are approved, the Secretary may waive for good cause the requirement for prior notice and comment in the *Federal Register* and will publish a single notice in the *Federal Register* making the action effective. This category of actions presumes the Secretary will find that the need for swift implementation and the extensive notice and opportunity for comment on these types of measures, along with the Council already having analyzed the scope of their impacts, will serve as good cause to waive the need for additional prior notice and comment in the *Federal Register*.

<u>C. Management Measures Rulemaking For Actions Developed Through the Three-Council-Meeting Biennial Specifications Process and Two *Federal Register* Rules</u>

These include (1) management action developed through the biennial specifications process; (2) management measures being classified as routine; or (3) trip limits that vary by gear type, closed seasons or areas, and in the recreational fishery, bag limits, size limits, time/area closures, boat limits, hook limits, and dressing requirements the first time these measures are used. Examples include: changes to or imposition of gear regulations; imposition of landings limits, frequency limits, or limits that differ by gear type; closed areas or seasons used for the first time on any species or species group or gear type. The Council will develop and analyze the proposed management actions over the span of at least two Council meetings (usually April and June) and provide the public advance notice and opportunity to comment on both the proposals and the analysis prior to and at the second Council meeting. If a management measure is designated as routine under this procedure, specific adjustments of that measure can subsequently be announced in the *Federal Register* by notice as described in the previous paragraphs. The Secretary will publish a proposed rule in the *Federal Register* with an appropriate period for public comment followed by publication of a final rule in the *Federal Register*.

The three-Council-meeting process refers to two decision meetings. The Council will develop proposed harvest specifications during the first meeting (usually November). They will finish drafting harvest specifications and develop the management measures during the second meeting (usually April). Finally, at the third meeting, the Council will make final recommendations to the Secretary on the complete harvest specifications and management measures biennial management package (usually June). For the Council to have adequate information to identify proposed management measures for public comment at the first management measures meeting, the identification of issues and the development of proposals normally must begin at a prior Council meeting.

<u>D. Full Rulemaking For Actions Normally Requiring at Least Two Council Meetings and Two *Federal Register* Rules (Regulatory Amendment)</u>

These include any proposed management measure that is highly controversial or any measure that directly allocates the resource. These also include management measures that are intended to have permanent effect and are discretionary, and for which the impacts have not been previously analyzed. Full rulemakings will normally use a two-Council-meeting process, although additional meetings may be required to fully develop the Council's recommendations on a full rulemaking issue. Regulatory measures to implement an FMP amendment will be developed through the full rulemaking process. The Secretary will publish a proposed rule in the *Federal Register* with an appropriate period for public comment followed by publication of a final rule in the *Federal Register*.

Council-recommended management measures addressing a resource conservation issue must be based upon the identification of a point of concern through that decision-making framework, consistent with the specific procedures and criteria listed in Section 6.2.2.

Council-recommended management measures addressing social or economic issues must be consistent with the specific procedures and criteria described in Section 6.2.3.

Council-recommended changes to habitat protection measures must be consistent with the specific procedures and criteria described in Section 6.2.4.

6.2.1 Routine Management Measures

Routine management measures are those that the Council determines are likely to be adjusted on an annual or more frequent basis. The Council will classify measures as routine through either the specifications and management measures or rulemaking processes (C. or D. above). In order for a measure to be classified as routine, the Council will determine that the measure is appropriate to address the issue at hand and may require further adjustment to achieve its purpose with accuracy.

As in the case for all proposed management measures, prior to initial implementation as routine measures, the Council will analyze the need for the measures, their impacts, and the rationale for their use. Once a management measure has been classified as routine through one of the two rulemaking procedures outlined above, it may be modified thereafter through the single meeting notice procedure (B. above) only if (1) the modification is proposed for the same purpose as the original measure, and (2) the impacts of the modification are within the scope of the impacts analyzed when the measure was originally classified as routine. The analysis of impacts need not be repeated when the measure is subsequently modified if the Council determines that they do not differ substantially from those contained in the original analysis. The Council may also recommend removing a routine classification.

Experience gained from management of the Pacific Coast groundfish fishery indicates that certain measures usually require modification on a frequent basis to ensure that they meet their stated purpose with accuracy. For commercial fisheries, these measures are trip landing limits and trip frequency limits, including cumulative limits, and notification requirements. They have been applied to the commercial fishery either to lengthen the duration of the fishery, so as not to disturb traditional fishing and marketing patterns; to reduce discards and waste, or; to discourage targeted fishing while allowing small incidental catches when attainment of a HG or quota is imminent. In cases where protection of an overfished or depleted stock is required, the Council may impose limits that differ by gear type, or establish closed areas or seasons. These latter two measures were not historically imposed through the annual management cycle (now biennial) because of their allocative implications. However, this additional flexibility has become necessary to allow the harvest of healthy stocks as much as possible while protecting and rebuilding overfished and depleted stocks, and equitably distributing the burdens of rebuilding among sectors. The first time a differential trip limit or closed season is to be imposed in a fishery, it must be imposed during the biennial management cycle (with the required analysis and opportunity for public comment) and subsequently may be modified inseason through the routine adjustment process.

For recreational fisheries, bag limits, size limits, time/area closures, boat limits, hook limits, and dressing requirements may be applied to particular species, species groups, sizes of fish and gear types. For the recreational fishery, bag and size limits have been imposed to spread the available catch over a large number of anglers, in order to avoid waste, and to provide consistency with state regulations.

Routine management measures are also often necessary to meet the varied and interwoven mandates of the Magnuson-Stevens Act and FMP. These mandates include: preventing overfishing and rebuilding overfished species in a manner consistent with rebuilding plans, reducing bycatch, allowing the harvest of healthy stocks as much as possible while protecting and rebuilding overfished and depleted stocks, and equitably distributing the burdens of rebuilding among the sectors.

Any measure designated as routine for a particular species, species group, or gear type may not be treated as routine for a different species, species group, or gear type without first having been classified as routine. Each year, the SAFE document will list all measures that have been designated as routine.

The Council will conduct a continuing review of landings of those species for which HGs, quotas, OYs, or specific routine management measures have been implemented and will make projections of the landings at various times throughout the year. If in the course of this review it becomes apparent that the rate of landings is substantially different than anticipated, and that the current routine management measures will not achieve harvest management objectives, the Council may recommend inseason adjustments to those measures. Such adjustments may be implemented through the single-meeting notice procedure (B. above).

Routine Management Measures through Amendment 18:

Commercial limited entry and open access fisheries:

> Trip landing and frequency limits, size limits, for all gear types may be imposed: to extend the fishing season; to minimize disruption of traditional fishing and marketing patterns; to reduce discards; to discourage target fishing while allowing small incidental catches to be landed; to protect overfished species; to allow small fisheries to operate outside the normal season; and, for the open access fishery only, to maintain landings at the historical proportions during the 1984-88 window period.

Trip landing and frequency limits have been designated as routine for the following species or species groups: black rockfish, blue rockfish, bocaccio, canary rockfish, chilipepper rockfish, cowcod, darkblotched rockfish, Pacific ocean perch, shortbelly rockfish, splitnose rockfish, widow rockfish, yelloweye rockfish, yellowtail rockfish, minor nearshore rockfish or shallow and deeper minor nearshore rockfish, shelf or minor shelf rockfish, and minor slope rockfish; DTS complex, which is composed of Dover sole, sablefish, shortspine thornyheads, and longspine thornyheads, both as a complex and for the species within the complex; arrowtooth flounder, English sole, petrale sole, Pacific sanddabs, rex sole, and the flatfish complex, which is composed of those species plus any other FMP flatfish species; Pacific whiting; lingcod; cabezon; Pacific cod; spiny dogfish; and “other fish” as a complex consisting of all groundfish species listed in the FMP and not otherwise listed as a distinct species or species group.

> Size limits have been designated as routine for sablefish and lingcod.

Trip landing and frequency limits that differ by gear type and closed seasons may be imposed or adjusted on a biennial or more frequent basis for the purpose of rebuilding and protecting overfished or depleted stocks. To achieve the rebuilding of an overfished or depleted stock, a sector or sectors of the primary Pacific whiting may be closed if a total catch limit of an overfished species has been designated for the whiting fishery and that total catch limit is reached before the sector’s whiting allocation is reached. Total catch limits in the primary Pacific whiting fishery may be established or adjusted as routine management measures.

Recreational fisheries all gear types:

> Routine management measures for all groundfish species, separately or in any combination,

include: bag limits, size limits, time/area closures, boat limits, hook limits, and dressing requirements. All routine management measures on recreational fisheries are intended to keep landings within the harvest levels announced by NMFS, to rebuild and protect overfished or depleted species, and to maintain consistency with State regulations, and for the other purposes set forth in this section.

Bag limits may be imposed to spread the available catch over a large number of anglers; to protect and rebuild overfished species; to avoid waste.

Size limits may be imposed to protect juvenile fish; to protect and rebuild overfished species; to enhance the quality of the recreational fishing experience.

Season duration restrictions may be imposed to spread the available catch over a large number of anglers; to protect and rebuild overfished species; to avoid waste; to enhance the quality of the recreational fishing experience.

All fisheries, all gear types:

Depth-based management measures, particularly the setting of closed areas known as GCAs may be imposed on any sector of the groundfish fleet using specific boundary lines that approximate depth contours with latitude/longitude coordinates. Depth-based management measures and the setting of closed areas may be used to: protect and rebuild overfished stocks; extend the fishing season; for the commercial fisheries, to minimize disruption of traditional fishing and marketing patterns; to reduce discards; for the recreational fisheries, to spread the available catch over a large number of anglers; to discourage target fishing while allowing small incidental catches to be landed; and to allow small fisheries to operate outside the normal season.

The current list of routine management measures is published in Federal regulations at 50 CFR 660.370.

6.2.2 Resource Conservation Issues—The Points of Concern Framework

The points of concern process is the Council's second major tool (along with setting harvest levels) in exercising its resource stewardship responsibilities. The Council developed the points of concern criteria to assist it in determining when a focused review on a particular species or species group is warranted, which might result in the need to recommend the implementation of specific management measures to address the resource conservation issue. This process is intended to foster a continuous and vigilant review of the Pacific Coast groundfish stocks and fishery to prevent unintended overfishing or other resource damage. To facilitate this process, a Council-appointed management team (the GMT or other entity) will monitor the fishery throughout the year, taking into account any new information on the status of each species or species group. By this means, they will identify resource conservation issues requiring a management response. The Council is authorized by this FMP to act based solely on evidence that one or more of these points of concern criteria has been met. This allows the Council to respond quickly and directly to a resource conservation issue. In conducting this review, the GMT or other entity will use the most current catch, effort, and other relevant data from the fishery.

In the course of the continuing review, a point of concern occurs when any one or more of the following situations occurs or is expected to occur:

AN INITIAL DRAFT COUNCIL STAFF WHITE PAPER ON POTENTIAL REVISIONS TO THE GROUNDFISH BIENNIAL HARVEST SPECIFICATIONS AND MANAGEMENT MEASURES PROCESS

Table of Contents

Introduction

The Council transitioned from an annual to biennial implementation of harvest specifications and management measures with Amendment 17 to the groundfish Fishery Management Plan (FMP). This transition was intended to: 1) comply with a court order requiring the National Marine Fisheries Service (NMFS) to provide more opportunity for public comment in the rulemaking process; and 2) streamline the process of and reduce the workload associated with developing specifications and management measures so that more Council and NMFS time may be devoted to addressing other issues.[1]

Overall, the biennial cycle has been successfully achieving the stated goals in Amendment 17. The proposed regulations implementing the harvest specifications and management measures process now fully accommodates Federal notice and comment rulemaking requirements. Additionally, the Council and NMFS have been able accomplish numerous other groundfish amendments in addition to the two year harvest specifications and management measures. However, workload associated with the biennial cycle has increased substantially and there are underlying process issues that require attention. Some of the problems may be resolved in the short term through changes in the timing of key decisions and supporting analyses, which should result in a more sustainable workload for all involved, increasing the probability of implementation on January 1. Further, a review of the advisory bodies' responsibilities and resources could also help improve workflow and better support Council decision-making.

The 2011-2012 biennial cycle overlapped with several events that made the process anything but routine. First, the cycle corresponded with the implementation of Amendments 20 and 21, which rationalize the trawl fishery and establish formal allocations for the trawl and non-trawl sectors. The Council was also considering Amendment 23, which was needed to incorporate a new harvest specifications framework that was compelled by the passage of the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSRA) of 2006 and the revised National Standard 1 guidelines interpreting the MSRA. These three amendments changed the existing framework and substantially increased the complexity and workload surrounding the 2011-2012 and future harvest specifications and management measures process.

The overfished species rebuilding plans typically require substantial time from the analysts and the Council. The 2011-2012 cycle involved reevaluation of the existing seven rebuilding plans and creation of a new rebuilding plan for petrale sole, which was declared overfished in early 2010. Furthermore, prior to final action at the June Council meeting, a court ruling was issued in response to the latest in a series of complaints filed in Natural Resources Defense Council v. Locke, challenging the rebuilding provisions in the groundfish FMP. The ruling changed the 2010 harvest specifications for cowcod, yelloweye rockfish, and darkblotched rockfish which consequently required a new analysis of the no action alternative between the April and June Council meetings.

The impact of these complexities was evidenced at the Council meetings, which resulted in very extensive and lengthy discussions on the Council floor. For comparison, the amount of time

[1] Natural Resources Defense Council, Inc. v. Evans, 2001 168 F. Supp. 2d 1149

spent discussing the 2011-2012 biennial cycle was approximately 1.6 times longer than the time spent during the development of the 2009-2010 cycle. The Council's advisory bodies were also overwhelmed with analyzing and generating recommendations relative to the new frameworks. The Council's Groundfish Management Team (GMT) worked extraordinarily long days; one team member estimated over 50 hours of overtime at the April Council meeting alone. The GMT produced nearly double the number of pages in their team statements, which are in addition to the analysis and write ups provided for the draft environmental impact statement (EIS). After final Council action, the GMT, Council and NMFS staff spent considerable time completing the analysis of the final preferred alternative, preparing the draft EIS, drafting and deeming the regulations, carrying out rulemaking, and processing of the FMP amendment. Due to numerous process issues, almost every post-Council meeting deadline in the schedule that was agreed-upon pre-season was missed, making workload planning nearly impossible.

Goal of this White Paper

The extraordinary workload associated with the 2011-2012 biennial process may have been somewhat unique given the major co-occurring events described above. Nonetheless, certain underlying process issues should be resolved in order to provide a more sustainable workload and a better likelihood of implementation by the January 1 start of the fishing year. **The following paper provides a brief background on the biennial process and highlights possible ways of making the process more efficient, transparent, and effective.** To scope this range of possible improvements, Council staff conducted a series of interviews with the individuals primarily responsible for the analysis and production of the groundfish harvest specifications and management measures EIS. Interviewees included representatives from the NMFS Northwest Region (NWR), Southwest Region, General Counsel, Northwest Fisheries Science Center (NWFSC) as well as the Council's GMT.

The initial draft of the white paper, presented here, provides background information on the process of adopting harvest specifications and management measures, and summarizes the recommendations gathered from the interview process. At the end of the document, Council staff recommends that the Council consider moving forward with a more detailed analysis of the recommendations, including scoping any additional ideas for improvement, by establishing a task force and adopting a schedule for Council consideration and possible implementation.

Background

From 1990 to 2004, the Council developed recommendations for the specifications and management measures annually in a two-meeting process, usually in September and November. Subsequent to final Council action, NMFS would publish a final rule in the Federal Register with the opportunity for public comment and correction after the effective date of the action. A court ruling in 2001 ordered NMFS to provide prior notice and allow public comment on the annual specifications.[2] The rulemaking process requires agencies to publish proposed regulations in the Federal Register, provide a public comment period, and then publish final regulations and public comment in the Federal Register before the regulations are effective. Concurrently, NMFS asked

[2] Natural Resources Defense Council, Inc. v. Evans, 2001 168 F. Supp. 2d 1149

all fishery management councils to consider streamlining their process for developing regulatory recommendations. The Council's ambitious September and November schedule and the requirements of the rulemaking process, which can take five months or more, made it difficult to attain a January 1 start date for fisheries. The Council took up Amendment 17 to address these procedural issues and to create more time for scientific processes, public involvement, decision-making, and Federal rulemaking.

During the development of Amendment 17, five alternatives were analyzed that included variations on the length of the specifications and management measures (i.e., annual or biennial), the fishing year start date (January 1, March 1, or May 1), the Council schedule for decision-making, and a schedule for conducting new and updated groundfish stock assessments. The analysis for a biennial cycle introduced the concept of having "on" years where scientific findings are developed into management specifications and "off" years where stock assessment methods and databases are refined. The Council's final preferred alternative was a biennial cycle with a January 1 fishing year start date and a three-meeting Council process with stock assessments conducted every other year. Specifically, the process envisioned proposed specifications and management measures to be decided at the November Council meeting (meeting 1), preliminary preferred alternatives and management measures in March/April (meeting 2), and final Council action in June (meeting 3).

The current process for biennial management accommodates several important sequential steps, including scientific peer review of data and analyses used for management decision-making; preparation of either an environmental assessment or EIS as required by the National Environmental Policy Act (NEPA) to analyze alternative harvest specifications and management measures; the opportunity for constituent meetings sponsored by state agencies to solicit public input on a preferred management alternative; and full notice and comment rulemaking to implement new biennial regulations effective on January 1.

Sections of the FMP relevant to the harvest specifications and management measures process can be found in Agenda Item H.1.a Attachment 1. Figures 1 and 2 provide an overview of the biennial cycle responsibilities and Council actions by month and year. Council attention to the biennial process begins in June, one year prior to final action, when the process and schedule for developing the harvest specifications and management measures is adopted. The subsequent three-meeting process typically occurs in November and April, with final Council action in June. After Council final action, the Council decision must be submitted for the implementation process conducted by NMFS. The specifics of the process depend on the nature of the action and the level of analysis; however, there are a number of parallel processes which must be coordinated by NMFS in order to implement the action through regulations (and FMP amendment, if applicable). Appendix 1 provides greater detail on the primary applicable laws affecting the biennial harvest specifications and management measures process. Table 1 includes an example timeline that incorporates these processes for implementing the 2013-2014 process, assuming an EIS and FMP amendment are necessary.

During the 2011-2012 cycle, for the first time, the proposed rule implementing the harvest specifications and management measures process was thoroughly reviewed by the Council staff and GMT prior to being deemed by the Executive Director of the Council.

Harvest Specifications Process

Amendment 23 to the FMP proposes modifications to the way the biennial harvest specifications are decided but the timing of Council action and the fishery start date remains unchanged. Under the proposed framework, an overfishing limit (OFL), which is the estimated maximum sustainable yield (MSY) harvest level, is set for each stock and stock complex in the fishery. An acceptable biological catch (ABC) is then specified at a level lower than the OFL to accommodate the scientific uncertainty in the OFL. The annual catch limit (ACL) is set equal to or below the ABC to accomplish the MSRA objective of managing fisheries over the long term at an optimum yield. Considerations for setting ACLs include management uncertainty, socioeconomic objectives, rebuilding objectives, and ecological considerations. Finally, in cases where current accountability measures, such as inseason catch monitoring and adjustment of management measures, are considered inadequate for keeping harvest within a specified ACL, an annual catch target (ACT) below the ACL may be specified.

West coast groundfish harvest specifications are decided every other year for the subsequent two-year management cycle, with the exception of Pacific whiting which is assessed annually. Data and analyses informing harvest specifications come from assessments and, for overfished species, rebuilding analyses. Harvest specifications for unassessed stocks are typically based on historical harvests with a relatively larger precautionary uncertainty buffer than specified for assessed stocks to account for greater scientific uncertainty.

Full stock assessments are typically peer-reviewed in a two-step process. A Stock Assessment Review (STAR) panel chaired by member of the Council's Scientific and Statistical Committee (SSC) and further comprised of two independent reviewers with no explicit ties to the west coast groundfish management agencies and one other reviewer with west coast groundfish experience. The SSC subsequently reviews these assessments and the recommendations of the STAR panel before recommending the assessment for use in management. In cases where the STAR panel or the SSC reject an assessment, the SSC may recommend a further review late in the assessment cycle in a "mop-up" review panel. The SSC does a final review of any assessments recommended by the mop-up panel before making their formal recommendation of an assessment.

Updated stock assessments and rebuilding analyses are initially reviewed by the SSC Groundfish Subcommittee and then reviewed by the entire SSC before these analyses are recommended for decision-making. Final review and adoption of stock assessments and rebuilding analyses occurs at or before the November Council meeting that marks the beginning of the biennial specifications decision-making process.

Stock assessments are typically brought forward for Council adoption at the June and September meetings in odd years. At its November meeting, the Council typically adopts the SSC-recommended MSY harvest level (i.e., OFL under the Amendment 23 framework) for all actively managed stocks and stock complexes. Additionally, the Council adopts a range of ACLs for detailed analysis at the November meeting. The Council is also encouraged to adopt preliminary-preferred ABCs and ACLs at the November meeting to better focus analysis. Preferred ABCs and ACLs are decided in the subsequent April Council meeting. In practice, some final preferred ACLs, especially for the more constraining stocks, have been decided in the final June meeting when management measures are also decided. This schedule allows close to six months after the June Council meeting for completing the analysis of the final preferred alternative, preparing the draft EIS, taking comment and preparing the final EIS, regulation writing and deeming, rulemaking, and the processing of any associated FMP amendments.

Management Measures Process

Section 6.0 of the FMP outlines the purpose of management measures and the process by which measures are established and adjusted (Agenda Item H.1.a, Attachment 1). More specifically, the management measures process during the biennial cycle includes the following components: 1) establishing accountability measures including ACTs and harvest guidelines; 2) deductions from the ACLs or ACTs to account for groundfish mortality in tribal fisheries, incidental open access fisheries (e.g., non-groundfish fisheries that impact groundfish stocks), scientific research, and exempted fishing permits (EFPs); 3) sector allocations for species without long term formal allocations specified in the FMP; 4) fishery-specific management measures required under a range of harvest specifications (i.e., integrated alternatives); and 5) the analysis of new management measures.

Accountability measures are management controls to prevent the ACL from being exceeded. The new National Standard 1 guidelines identify two primary sources of management uncertainty: 1) uncertainty in the ability of managers to constrain catch so the ACL is not exceeded; and 2) uncertainty in quantifying the true catch amounts. In other words, management uncertainty involves consideration of the effectiveness of management measures at limiting catch to desired levels, and at the same time, an examination of the accuracy and precision of the estimates used to quantify catch. The new NS1 guidelines recommend consideration of the ACT, which can be set below the ACL if there is uncertainty in the ability of the management system to effectively keep total fishing mortality below the prescribed ACL.

Static off the top deductions for groundfish mortality in tribal fisheries, incidental open access fisheries (e.g., non-groundfish fisheries that impact groundfish stocks), scientific research, and EFP set asides are required in order to calculate the trawl and non-trawl allocations necessary to support a rationalized trawl fishery (see 75FR60868, definition of fishery harvest guideline). Prior to Amendments 20 and 21, if the Council discovered that the off the top deductions in the scorecard were mis-specified due to changes in tribal take, research, EFPs, or incidental open access, the scorecard would simply be updated and routine inseason management measures for fisheries would be adjusted up or down to attain but not exceed the optimum yields (OYs). Under Amendment 21, off the top deductions to the ACL or ACT need to be estimated during the biennial process in order to calculate static trawl and non-trawl sector allocations. Once the yield is compartmentalized into trawl and non-trawl allocations, the allocations cannot be revised through routine inseason management if changes in the set asides arise mid-biennium.

There are two types of sector allocations used to manage west coast groundfish fisheries: long-term formal allocations and ad hoc allocations that might persist for only one 2-year management cycle. Long-term formal sector allocations are meant to persist and an FMP amendment is required to change these allocations. Ad hoc biennial allocations are either hard 2-year allocations (e.g., trawl and non-trawl allocations) or the 2-year catch sharing arrangements (e.g., harvest guidelines in the recreational fisheries) made in the biennial specifications process that attempt to meet conservation objectives while also meeting the socioeconomic objectives of equitable coastwide and year-round fishing opportunities.

For the 2011-2012 cycle, the management measure components were combined into integrated alternatives in an effort to better understand the combined impacts of the harvest specifications and management measures decisions. In April 2010, the Council considered nine integrated alternatives, in addition to the no action alternative, and selected a preliminary preferred alternative for more detailed analysis. In addition to the Council's preliminary preferred alternative, intermediate and lower options were analyzed to better explore the relationship between the time to rebuild the overfished species and the needs of the fishing communities in order to determine the shortest time possible while taking into account the appropriate statutory factors. The intermediate alternative was developed in consideration of the court order issued on April 23, 2010.

The integrated alternatives significantly added to the 2011-2012 workload and complexity of the analysis. The task was largely accomplished by the GMT who modeled the estimated harvest of selected species and proposed management measures under each alternative, and by Council staff, a contractor, and the NWFSC who conducted the corresponding socioeconomic analysis and incorporated the results into the draft EIS. Since the integrated alternatives for detailed analysis were not adopted until the April Council meeting, there was a very short turnaround for the analysis of the alternatives and the June briefing book deadline (end of May).

The groundfish FMP is based on principles of adaptive management with management measures enacted in anticipation that they will be evaluated and modified when necessary and appropriate. Management measures may be developed to achieve the full range of social, economic, and ecological objectives included in the MSRA. As information and experience are gained, new priorities and mandates arise; unanticipated consequences are discovered, requiring the need to revisit management measures. The list of needed changes and modifications can grow quickly and the need for prioritization given limited resources is inevitable. New regulatory management measures can be analyzed in a two-meeting Council process or within the biennial cycle. Some changes require an FMP amendment which involves a three-meeting Council process.

Responsibilities of the Council's Advisory Bodies

Scientific and Statistical Subcommittee

The SSC's role is to ensure that the analysis used in the harvest specifications and management measures process represents the "best available science." More specifically, the SSC is responsible for reviewing and recommending the stock assessments (full and updates) and rebuilding analysis for use in management. The SSC is also responsible for reviewing and approving stock categorizations (i.e., category 1, 2, and 3), reviewing and recommending the OFLs, and calculating the scientific uncertainty buffers. Additionally, the SSC has reviewed some of the GMT's total mortality projection models for overfished species and selected non-overfished species (e.g., the trawl model). For the 2011-2012 harvest specifications and management measures process, the SSC reviewed the input-output model (IO-PAC), which was developed by the NWFSC for use by the Council in evaluating the regional economic impacts of changes to commercial harvest of west coast groundfish (Agenda Item G.9.b, Supplemental SSC

Report, November 2009). This model had previously been reviewed by a panel of independent experts outside of the Council process under terms of reference provided by the NWFSC.

Groundfish Management Team

The GMT is primary analysts in the harvest specifications and management measures process and one of the main contributors to the EIS. The team analyzes or recommends harvest limits, develops and evaluates rebuilding plans, prepares fishery impact analyses, and conducts other tasks assigned by the Council or Executive Director. During the 2011-2012 process the GMT's workload was significantly increased for both harvest specifications and management measures. In coordination with the SSC groundfish subcommittee, the GMT was involved in categorizing stocks and conducting the productivity and vulnerability analysis for SSC review and approval. The GMT, in coordination with Council staff, drafted the new petrale sole rebuilding plan, reevaluated the seven existing rebuilding plans, and provided guidance to the Council. Finally, the GMT was primarily responsible for the analysis of the integrated alternatives, which also increased workload compared to previous cycles.

Groundfish Advisory Sub-Panel

The Groundfish Advisory Sup-Panel (GAP) represents the commercial and recreational fishing industry, tribes, the public, and conservation interests. They advise the Council on fishery management issues such as annual catch limits, rebuilding plans, management measures, and FMP amendments. The GAP plays an integral part of the harvest specifications and management measures process. They help define the needs of the fishing community and help the analyst (typically the GMT) ground truth assumptions for the management measures analysis, and provide the Council with perspectives on the public's various policy preferences.

Summary of Recommendations from the Interviews

Interviewees suggested that many of the problems plaguing the harvest specifications and management measures process could be resolved in the short term through changes in the timing of key decisions and supporting analyses, which should result in more sustainable workload for all involved. These changes could be reinforced by developing and adopting a more detailed process and schedule for both the Council action and the NMFS implementation process, based on careful consideration of available resources. As important, there must be a commitment on the part of the Council, analysts, and agencies to meet the agreed upon milestones and deadlines to ensure time for a focused analysis and review. A summary of the interviewee recommendations by topic follows.

Overarching

After final Council action, the NMFS implementation schedule requires several milestones and deadlines that must be achieved to increase the likelihood of a January 1 implementation (Table 1). In order to be successful, the implementation schedule should be created with close coordination between the NWR, SWR, General Counsel, and Council staff. Interviewees suggested that the schedule has become untenable, which means there a greater risk of the implementation date is being later than January 1, as occurred in the 2009-2010 cycle. Some interviewees suggested that a longer implementation schedule is needed, which could require significant changes to the Council process and a subsequent amendment to the FMP.

Interviewees recommended that the Council and NWR staff, along with the NEPA coordinator, develop a standardized reporting format for the EIS which would increase readability and facilitate public comment and Council decision-making. Additionally, the revised format should provide for an easier transition from analysis and decision-making to regulations, ideally streamlining the process and improving workflow. Furthermore, if the adopted schedule provides for more front-loading, there could be time to summarize the relevant components of the EIS in order to better facilitate public comment and Council decision-making. For example, the integrated alternatives describe the impacts of the harvest specifications decisions on the various fishery sectors. However, some interviewees expressed the desire to see the information summarized by sector, instead of by alternative.

Staff at the NWR, along with the GMT, requested that the objectives and instructions for the deeming process be clearly outlined prior to the next cycle. Additionally, they recommended that the Council adopt a formal deeming schedule that provides sufficient time for review and discussion of the proposed regulatory changes. Details of such schedule could be provided at the June Council meeting in the odd year.

Harvest Specifications

Timely decision-making of 2011-2012 biennial harvest specifications was compromised by two initiatives: 1) Amendment 23 and 2) development of new methodological approaches recommended by the SSC for estimating the OFLs for unassessed stocks. Further, a new initiative to reconfigure the current stock complexes is anticipated for the 2013-2014 cycle. The requisite analyses and timing of decisions for this initiative should be well-planned to avoid process delays that could compromise focused analysis and decision-making for other biennial harvest specifications and management measures.

Amendment 23 proposes to better prevent overfishing by incorporating new terms and procedures for incorporating precautionary buffers in harvest specifications to manage scientific and management uncertainty. The MSRA mandated implementation of these new National Standard 1 guidelines by 2011 for stocks not subject to overfishing[3]. Amending the FMP would have been a relatively easy task given that the west coast groundfish FMP was the template used to develop the new National Standard 1 guidelines. However, NMFS did not publish the revised National Standard 1 guidelines, which formed the basis for Amendment 23 decisions, until January 2009. Consequently, the SSC was not given adequate time to develop new methodologies for quantifying scientific uncertainty in consideration of new ABC specifications. Therefore, ABC control rules were not developed in a timely fashion, which delayed Council decisions for Amendment 23 and 2011-2012 harvest specifications. Such problematic delays are not anticipated for the next specifications cycle given that these new rules are now in place. However, if new approaches for quantifying scientific uncertainty and ABC uncertainty buffers are considered for the 2013-2014 biennial specifications, it will be important to have these

[3] The MSRA also mandated implementing new National Standard 1 guidelines by 2010 for stocks subject to overfishing; however, no west coast groundfish stocks were subject to overfishing.

approaches reviewed and finalized prior the November 2011 meeting to avoid the same process delays experienced in deciding the 2011-2012 specifications.

New approaches for determining OFLs for unassessed species were developed in the 2011-2012 specifications cycle. These approaches (i.e., depletion-based stock reduction analysis (DBSRA) and depletion-corrected average catch (DCAC), were considered superior to using average historical catches for determining OFLs for unassessed species by the SSC. However, with the competing Amendment 23 initiative of developing new ABC control rules, there was also a delay getting these methods reviewed and approved, which subsequently delayed Council harvest specification decisions. Final OFL and ABC decisions were therefore made at the June 2010 Council meeting, when all such decisions should be made by the April meeting at the latest to allow better focus on deciding final management measures. Potential delays in deciding 2013-2014 OFLs are not anticipated. The Council decided to convene a formal review panel for any methods considered for deciding 2013-2014 OFLs in April 2011. This should allow adequate time for the SSC to decide new OFLs in advance of the November 2011 meeting.

The Council staff recommended process for deciding 2013-2014 harvest specifications is to decide final OFLs for all stocks and stock complexes at the November 2011 meeting. Any new approaches for deciding ABC scientific uncertainty buffers should also be decided by the November 2011 meeting to allow the Council to decide preliminary preferred or final ABCs then. The Council staff recommends that, if possible, the Council should decide preliminary preferred ACLs for non-overfished species and a range of ACLs for overfished species at the November 2011 meeting that are within the final preferred OFLs and preliminary preferred or final ABCs. This would allow for detailed analysis of a "more viable" range of ACLs over the winter. The Council could then decide final preferred ABCs and confirm or modify the preliminary preferred ACLs in April 2012. This more measured process for determining biennial harvest specifications should enable better, more focused analysis and decision-making than experienced in the 2011-2012 decision-making cycle.

Council staff recommends that the GMT and SSC reconfigure the current stock complexes for use in the 2013-2014 cycle. This initiative may involve adding and/or removing some species from the FMP and regrouping species in current stock complexes. Conceptually, the task involves managing species with similar vulnerabilities to overfishing within a complex. Harvest specifications determined for well-structured stock complexes should theoretically reduce the risk of serial overfishing of component stocks within a complex. Council staff recommends that all the requisite analysis of new stock complexes be completed by the November 2011 meeting to allow final decisions on new complexes at that meeting. This timing may avoid the types of process delays that could compromise focused analysis and decision-making on harvest specifications for stock complexes to be implemented in 2013.

One interviewee recommended that the Council schedule to adopt assessments be revised in order to accommodate overfished species assessments (both full and updates) early in the process, that is during the June Council meeting instead of the September Council meeting. Since overfished species constrain access to target species, understanding the status of the stocks at the earliest time possible would facilitate the analysis of potential management measures. Specifically, if changes in our understanding of stock status and biology require a change in the rebuilding plan, then having that information early in the process would provide more time for public input necessary to develop management measures.

Another interviewee recommended a comprehensive review of how stock assessments are approved and adopted by the Council at Council meetings. Problem areas include how Council members get the necessary detailed information and how much Council floor time is devoted to the approval process.

Management Measures

During the 2011-2012 cycle, the GMT, in coordination with the West Coast Groundfish Observer Program, began some initial scoping to address uncertainty in quantifying the true catch amounts as it relates to projection model inputs. The current formulation of fishery projection models assume several inputs are known without error. These include total landing estimates, allocation of landing by depth strata, bycatch ratios, and discard mortality. Treating these quantities as known decreases the amount of uncertainty admitted in the model and ultimately influences the realization of model outputs (i.e., projected catches). Improvements to these models would address characterizing the uncertainty in each of the input quantities. Council staff recommends that this task be included in the workload planning for the GMT, with the possibility of an SSC review, for the 2013-2014 cycle.

There are inherent difficulties in estimating the off the top deductions during the biennial cycle, as required by Amendment 21. For example, estimating groundfish mortality from research is problematic because regulations imposed under MSRA do not apply to scientific research; therefore research activities cannot be restricted by fishing regulations. Further, there are no requirements that researchers must inform NMFS of their activities in a manner that would facilitate annual or biennial planning. That is, new research may emerge at any time during the year and may potentially impact either target or overfished species. Additionally, biennial estimates for EFPs must occur before EFP applications have even been received. In essence, during the biennial cycle the Council would not be setting catch limits for any specific EFP projects, but considering future EFPs and the potential for needing to give those projects some amount of yield of both overfished species as well as non-overfished species.

Inevitably the off the top deductions will be mis-specified and solutions that result in the least amount of disruption to the formal allocations will be needed. Interviewees recommended that this issue be resolved prior to the 2013-2014 cycle. Since the off the top deductions and associated definition of fishery harvest guideline were created through Amendment 21, it may be logical to include this issue in the proposed trawl rationalization trailing amendment that will address the status of Amendment 6 relative to Amendment 21. Additionally, interviewees recommended consideration of two-year EFPs, timed appropriately with the biennial process, which would eliminate the need to predict future EFP needs. A preliminary interpretation is that this change would only require modifications to the Council's Operating Procedures and not the FMP.

In previous cycles, the Groundfish Allocation Committee (GAC) met over winter to discuss the types of management measures that could be necessary to reduce bycatch of depleted species in the various groundfish fisheries, while considering the needs of west coast fishing communities.

This dialogue was particularly useful for scoping the issues related to the two-year overfished species allocations and developing the framework for the analysis. Under the current process, with preliminary preferred decisions in April and analysis of the integrated alternatives occurring between the April and June Council meetings, there is insufficient time to conduct a GAC meeting. If preliminary preferred ACL decisions for non-overfished species and a narrow range of overfished species ACLs were chosen by the Council in November, the analysis of the integrated alternatives could occur over winter, providing sufficient time for a GAC meeting.

Interviewees recommended that the ACLs that are the basis for the integrated alternatives (i.e., preliminary preferred non-overfished species ACLs and overfished species ACL) should be narrowed at the November Council meeting, analyzed over winter, and included in the April briefing book. This would provide time for more focused and detailed analysis. The preliminary preferred integrated alternative will likely be some variation on one of the integrated alternatives analyzed over winter. Although this new alternative would need to be analyzed between the April and June Council meetings, this would involve a lot less work than if all integrated alternatives had to be analyzed between April and June. If this schedule were adopted, the socioeconomic analysis could also be provided at the April Council meeting, which would provide for greater understanding of the impacts prior to making a preliminary preferred decision.

Interviewees expressed concern that narrowing the range of alternatives for more detailed analysis can sometimes result in insufficient contrast between the impacts of the preferred alternative and the impacts of higher harvest levels. In the 2011-2012 process, the Council's preliminary preferred ACL decision for overfished species was used as the upper bounds for the integrated alternatives. However, the Council previously considered and rejected higher ACLs earlier in the process (see Chapter 2 of the draft EIS). The Council rejected the higher overfished species' ACL alternatives because they extended rebuilding too far to meet the Council's conservation objective to rebuild the stocks in the shortest time possible while taking into account the status and biology of the overfished stock, the needs of fishing communities, and the interaction of the overfished stock within the marine ecosystem. The interviewees recommended that future analysis include one or two alternatives that allow analysis of ACLs higher than those in the Council's preliminary preferred alternative so the impact of the Council's preliminary preferred alternative is better understood and reflected. If the number of integrated alternatives for analysis is expanded, it would add to the workload of the GMT and analytical team, which would need to be accommodated in the schedule.

In recent years, given Council workload on other groundfish items (e.g., Amendments 20, 21, and 23), there has been limited opportunity to analyze new management measures outside of the biennial cycle. As a result, the biennial cycle has been viewed as the "one time shot" to analyze new management measures. Several interviewees felt this expansion caused a significant burden on the process and recommended the Council limit the scope of management measures for consideration in the biennial cycle. The rationale was that implementing harvest specifications and management measures that keep total catch within the ACLs should be the priority, given limited resources. They recommended that the Council evaluate available resources, including advisory body and agency workload, at the June Council meeting and define the scope of the action for management measures. If the scope of management measures in the biennial process is limited, the Council would need to plan for more regulatory amendments to address management needs deemed to not fit within the scope of the biennial process.

Interviewees noted that more a detailed analysis of management measures needs to come before the Council in November, instead of April. Under the current process, a bulleted list of new management measures along with a brief description is presented in November. The Council narrows the list based on the potential for the management measure to achieve FMP goals and objectives as well as anticipated workload and available resources. Over winter, a preliminary analysis is conducted and is presented in April. If this preliminary analysis were presented in November, the Council would have a better understanding of the potential for the management measure to meet the FMP objectives. Additionally, the Council would be better able to assess the complexity of the proposed management measure and associated workload in order to determine if it can be accommodated. In April, the management measure analysis would be completed and included in the briefing book for a preliminary preferred decision, with final action in June.

Interviewees also requested that the Council provide more detailed guidance on the framework for prioritizing management measures for analysis. This framework could be used to develop a form for proposed management measures that outlines the criteria for considering how a particular management measure meets the FMP goals and objectives. Further, the form would allow the Council to determine whether the measure is better suited to the biennial management measures process or a separate two or three-meeting process. Appendix 2 contains regulation and FMP amendment proposal forms used by the International Pacific Halibut Commission and the North Pacific Fishery Management Council, which could form the basis for a similar proposal process for the Pacific Council.

Long Term Recommendations

At the September Council meeting, the GMT expressed support for Council consideration of improvements to the biennial process, including an FMP amendment, if necessary. During the interview process, several recommendations were raised during that cannot be accomplished prior to the 2013-2014 process or would require an FMP amendment. These ideas include

- A five year cycle or programmatic EIS with new stock assessment and management measures infused every two years.
- Changing the fishing year start date from January 1 to later in the year to provide more time for the NMFS implementation process.
- Separating the harvest specifications decision from the management measures decision.

Recommendations for the Advisory Bodies

Interviewees indicated the need to refine the SSC review process for the IO-PAC model and other socioeconomic analysis, such as the net present value and community vulnerability analysis. Depending on the complexity of the analytical framework, an independent review conducted within the Council process with the terms of reference developed by the SSC may be appropriate. Essentially, the review envisioned for the socioeconomic analysis was similar to the process currently conducted for the groundfish stock assessments. Timelines for accomplishing an SSC review would need to be developed such that there would be sufficient time for the review as well as time for the analysts to incorporate any recommended changes. Such a timeline

would result in the socioeconomic framework being approved by the SSC prior to the November Council meeting that starts the decision-making process (i.e., the odd year).
If the SSC has greater involvement in the review of the socioeconomic analysis, then the interviewees recommended that the Council should consider whether the current SSC membership and expertise is sufficient or if it should be expanded to include more economists, social scientists, or anthropologists.

Interviewees held differing views on the scope of GMT's role in the process, with some preferring a narrow role and others expressing the view that the team could perform a wide range of analytical tasks needed to inform Council decision-making. Interviewees recommended that that the Council, based on recommendations from Council staff, outline the team's assignments and responsibilities prior to beginning the biennial process and then assess whether the team has the right resources to accomplish the tasks. Further, it was recognized that depending on the scope of the work products anticipated, that the GMT may need to be expanded to include other experts to assist in the analysis.

Many members of the GMT also requested that Council staff and the NWR, along with the NEPA coordinator, develop a template or checklist that could be used to ensure the analysis for both harvest specifications and management measures is compliant and satisfies MSRA, NEPA and court orders. This guidance should come early, like at the June Council meeting and the October GMT meeting that start the biennial process.

Members of the GMT recognized the need to identify the standard set of data requests needed from the NWFSC, including trawl survey data used for apportioning the coastwide assessments as well as data requests from the West Coast Groundfish Observer Program for use in management measure analysis or model refinements. The GMT will work with the NWFSC to better align requests such that they enter into the process in a timely manner.

Interviewees noted that the GAP could use further guidance from the NWR relative to preparing statements to the Council that describe the needs of the fishing community.

Next Steps

During the interview process several potential solutions were recommended to improve the biennial process; however all concepts need further evaluation and consideration. Council staff recommends that the Council approve moving forward with detailed analysis of the recommendations and revisions by establishing a task force to help in the appropriate analytical tasks. Ideal candidates for the task force would have knowledge and experience with the biennial process and include members of the Council, GMT, SSC, GAP as well as Council staff, NWR staff, and General Counsel.

The task force could be charged with scoping changes to the 2013-2014 process as well as longer term changes that may require an FMP amendment. Council staff could expand the interview process and solicit further areas or ideas for improvement from the Council, advisory bodies, agencies, and the public. Staff could also investigate how harvest specifications and management measures are recommended by other Councils and implemented by NMFS. This information, along with the draft white paper presented here, could form the basis for the task force discussions.

Further, staff recommends that the Council adopt a schedule for considering and recommending revisions to the biennial process. The Council is tentatively scheduled to make decisions on changes for the 2013-2014 process and determine whether changes that require an FMP amendment are required at its April 2011 Council meeting. At the April meeting, the Council could receive a second draft white paper, including recommendations from the task force, to support Council decision-making for changes to the biennial process.

Table 1. An example schedule of the NMFS internal review process for the 2013-2014 cycle.

	Step interval	Step begins on:
NEPA		
Sunday, June 03, 2012	40	Begin NMFS internal review and revision of draft EIS, clearance
Friday, July 13, 2012	7	File draft EIS with EPA
Friday, July 20, 2012	45	EPA publishes NOA, 45-day public comment begins
Monday, September 03, 2012	*32*	Begin staff draft response to comments, FEIS preparation, and NMFS internal review
Friday, October 05, 2012	7	File FEIS with EPA
Friday, October 12, 2012	30	EPA publishes NOA, 30-day cooling off period begins
Sunday, November 11, 2012	*11*	30 days end
Thursday, November 22, 2012		ROD signed
MSRA		
Thursday, August 09, 2012	45	Begin preparation and internal review of FMP amendment and regulations
Sunday, September 23, 2012	5	FMP Amendment and proposed regulations transmitted from Council office to NMFS.
Friday, September 28, 2012	60	FMP Amendment Comment period begins
Tuesday, November 27, 2012	30	Secretarial decision on FMP Amendment
APA		
Wednesday, June 20, 2012	45	Begin preparation of proposed regulations
Saturday, August 04, 2012	30	Begin Council "deeming" and NMFS internal review
Monday, September 03, 2012	30	30-day comment period on proposed rule begins
Wednesday, October 03, 2012	60	Begin final rule package preparation and internal review
Sunday, December 02, 2012	30	Final rule publishes, 30-day cooling off period begins
Tuesday, January 01, 2013		30-day cooling off period ends, regulations effective

Timelines computed from final rule effective date

Draft EIS and final EIS NOA publication must fall on a Friday

Figure 1. Year 1 (odd year) work products and Council schedule for the biennial cycle.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Science	Stock assessments & STAR panels conducted					Stock assessment updates		Stock assessments & STAR Panel	Rebuilding Analysis and Mop-Up			
WCGOP Data Delivery	Bycatch rates for GMT models updated										Total Mortality Report: previous year est.	
GMT										Harvest Spex and MM mtg.		
Council Meetings			Adopt P. whiting assessment (annually)			Adopt stock assessments; SPEX schedule and process			Adopt stock assessments; Off yr science improvements		Adopt rebuilding analysis & Mop up; Adopt proposed SPEX and MM decisions	

Figure 2. Year 2 (even year) work products and Council schedule for the biennial cycle.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Science	Models and databases refined											
WCGOP Data Delivery	Bycatch rates for GMT models updated										Total Mortality Report: previous year est.	
GMT	Analyze harvest spex and MM; approve models		Analyze SPEX and MM				Finalize SPEX DEIS	Deeming				
Council Meetings			Adopt P. whiting assessment; Stock assessment planning	Adopt PPA SPEX and MM		Adopt final SPEX and MM; Final stock assessment planning						

Appendix 1 – Applicable Laws

The primary applicable laws affecting the biennial harvest specifications and management measures process are as follows:

- The Administrative Procedures Act (APA) and MSRA §304(b) govern the promulgation of regulations, which is the principal way in which harvest specifications and management measures are implemented. This includes a 15-day window for NMFS review of the proposed regulations, preparation of a proposed rule, which is published in the Federal Register and followed by a 30-day public comment period, publication of a final rule in the Federal Register and a 30-day cooling off period after publication before the regulations become effective. All together, once the regulations have been initially drafted, this process takes 90-120 days. (In unusual circumstances the process can take longer.)
- If the harvest specifications process also requires an FMP amendment (for example to incorporate a new rebuilding plan or revisions to existing plans) then MSRA §304(a) comes into play. Once the proposed amendment is formally transmitted to NMFS by the Council NMFS must immediately publish a Notice of Availability for the amendment, which triggers a 60-day public comment period. NMFS must take a final decision on the amendment within 30 days of the end of the public comment period. Taken together 95 days are typically allotted for this process.
- If NMFS determines that formal consultation on the effect of the proposed action on species listed under the Endangered Species Act pursuant to section 7 of the Act is required, the NEPA document would serve as the biological assessment, which provides information necessary to determine whether to initiate formal consultation. Under formal consultation a Biological Opinion is prepared, which supports a determination on the effect of the action on listed species and may contain discretionary and nondiscretionary measures to address effects. Once formal consultation is initiated, it must be completed within 135 days (60 days for the consultation and 45 days to prepare the Biological Opinion) and the action cannot be implemented before the consultation process is concluded.
- NEPA provides an umbrella framework to incorporate analyses required under applicable law and support decision-making. Since 2003 an EIS has been prepared for annual and biennial harvest specifications and management measures. If an EIS is prepared, a two-stage process is required. A draft EIS is filed with the Environmental Protection Agency. The EPA then publishes a Notice of Availability, which triggers a minimum 45-day public comment period. Once this is concluded, any comments received must be addressed in a final EIS, which is also filed with EPA. A 30-day cooling off period then ensues before the responsible official may sign the Record of Decision (ROD), which serves as the legal determination of the agency's action. The ROD must be signed before the final rule is published and in the case of a related FMP amendment, before the determination on approval of the amendment.

Appendix 2 – Example Proposal Forms

HALIBUT AND SABLEFISH IFQ PROGRAM
AMENDMENT PROPOSAL
North Pacific Fishery Management Council
Fax: (907) 271-2817

Name of Proposer: Date:

Address:

Telephone:

Brief Statement of Proposal:

Objectives of Proposal (What is the problem?):

Need and Justification for Council Action (Why can't the problem be resolved through other channels?):

Foreseeable Impacts of Proposal (Who wins, who loses?):

Are there Alternative Solutions? If so, what are they and why do you consider your proposal the best way of solving the problem?

Supportive Data and Other Information (What data are available and where can they be found?):

Signature:

Appendix 2 (cont')

IPHC Regulations Proposal Submission Form

Proposal Title:____
Year Proposed For: ______________

Submission Information (Please print or type)
Name: _____
Affiliation:
Address:
City: State/Prov: Postal/ZIP Code:
Telephone: Fax: Email:

Signature:

1. What is the definition and objective of the proposal?

2. Impacts: Describe who you think this proposed change might affect (include fishers, processors, agencies, and the public).

2a. Who might benefit from the proposed change?

2b. Who might suffer hardships or be worse off?

3. Are there other solutions to the problem described above? If so, why were they rejected?

Please attach any other supporting materials. All items submitted by **November 10, 2010** will be considered at the IPHC Annual Meeting. ***Remember to include contact information and signature.***

GROUNDFISH ADVISORY SUBPANEL REPORT ON INITIAL CONSIDERATION OF REVISIONS TO THE GROUNDFISH BIENNIAL MANAGEMENT PROCESS

The Groundfish Advisory Subpanel (GAP) received a report from Ms. Kelly Ames on potential revisions to the groundfish biennial harvest specifications and management measures process. The GAP agrees with the concern reflected in the Council staff White Paper (Agenda Item H.1a, Supplemental Attachment 2) regarding problems with timely implementation of harvest specs and management measures, and believes that revisions should be considered.

In discussing harvest specifications and management measures, the GAP has several comments that inform our view on process revisions.

- Presently, we are fishing up to six years out of phase with the data. It does not matter what we do with the process if the data going in is out of date or no good – garbage in, garbage out.

- Some members of the GAP believe implementation of the Trawl Individual Quota Program, in addition to wrapping up several other major fishery management plan amendments, will minimize pressure on the process.

- If we change our approach to harvest specifications and management measures to offer more breathing room, we should not force additional requirements into the process. If we make significant changes on the one hand and then add significant new burdens on the other (as has happened in the past) we will continue to be behind, scrambling to get things done on time etc.

- There is great concern that a longer time horizon would limit management flexibility in response to changing circumstances or data. It is imperative that the process remain/become responsive.

- The GAP supports the concept of a committee to help design revisions to the harvest specifications and management measures process.

PFMC
11/06/10

Agenda Item H.1.b
Supplemental SSC Report
November 2010

SCIENTIFIC AND STATISTICAL COMMITTEE REPORT ON INITIAL CONSIDERATION OF REVISIONS TO THE GROUNDFISH BIENNIAL MANAGEMENT PROCESS

The Scientific and Statistical Committee (SSC) was briefed on this issue by Ms. Kelly Ames, who led the group through a white paper on possible revisions to the groundfish biennial specifications process. The workload associated with the biennial process has increased substantially, particularly in the 2011-2012 biennial cycle. In evaluating workload demands of the process, it will be important to distinguish between the demands that were due to the novel aspects of 2011-2012 biennial cycle, such as developing and implementing an overfishing limit (OFL)/ABC/annual catch limit (ACL) framework, and those which are likely to occur in every cycle.

The SSC is actively involved in the groundfish harvest specification process. Some issues of relevance to the SSC include: 1) how and when science is introduced into the process, 2) how stock assessments are reviewed and approved by the Council, 3) when in the process species complexes will be evaluated, and 4) how and when socio-economic analyses be reviewed. A primary recommendation of the white paper is that a task force should be created to review the advisory bodies' responsibilities and resources and to consider ways to improve the process. If requested by the Council, the SSC will nominate one or more individuals to participate in the task force, and the SSC is ready to contribute in other ways as needed.

The SSC also reviewed the Stock Assessment Review (STAR) panel schedule for the upcoming biennial cycle. It was noted that the STAR panel for data poor species will need additional attention at the planning stages to be fully successful. An agenda for this meeting should be developed that clearly identifies the objectives of the meeting. Analysts will need to be identified to prepare papers that address those objectives. The primary objective of the STAR panel is to review DCAC and DB-SRA methods used to derive OFLs and ACLs for data-poor stocks (Category 3 stocks). However, scientists at the Northwest Fisheries Science Center and the Southwest Fisheries Science Center have been working on improvements to those methodologies, and the SSC recommends that data-poor STAR panel devote part of the agenda to reviewing new methods for data-limited stocks. A workshop prior to the meeting may be useful to identify a few promising methods that can be thoroughly reviewed at the STAR panel.

Since the focus of the STAR panel is on methods and data inputs, application of approved methods to data-limited stocks will need to occur after the STAR panel, and be reviewed at a later meeting. The SSC recommends that the SSC groundfish subcommittee review these results during its meeting in June to review update assessments. The meeting may need to be extended by one or two days to accomplish this review.

PFMC
11/6/10

NATIONAL MARINE FISHERIES SERVICE REPORT

National Marine Fisheries Service (NMFS) Northwest Region will briefly report on recent regulatory developments relevant to groundfish fisheries and issues of interest to the Pacific Fishery Management Council (Council).

NMFS Northwest Fisheries Science Center (NWFSC) will also briefly report on groundfish-related science and research activities.

Council Action:

1. Discussion and action as appropriate.

Reference Materials:

1. Agenda Item H.2.a, Attachment 1: *Federal Register Notices* Published Since the Last Council Meeting.

Agenda Order:

a. Regulatory Activities including Update on Biennial Specifications and Management Measures, Amendment 16-5, and Amendment 23 — **Frank Lockhart**
b. Fisheries Science Center Activities — **Jim Hastie**
c. Reports and Comments of Advisory Bodies and Management Entities
d. Public Comment
e. **Council Action:** As Appropriate

PFMC
10/15/10

FEDERAL REGISTER NOTICES

Groundfish and Halibut Notices
8/26/2010 through 10/15/2010

Documents available at NMFS Sustainable Fisheries Groundfish Web Site
http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/index.cfm

75 FR 52736. EPA. Environmental Impacts Statements; EIS No. 20100331, Draft EIS, NOAA, 00, Harvest Specifications and Management Measures for the 2011-2012 Pacific Coast Groundfish Fishery and Amendment 16-5 - Rebuilding plan for Petrale Sole - 8/27/10

75 FR 53380. Pacific Coast Groundfish Fishery Management Plan; Amendments 20 and 21; Trawl Rationalization Program. NMFS proposes specific measures for the implementation of Amendments 20 and 21 - 8/31/10

75 FR 60709. Notice of Availability for Amendments 16-5 and 23 to the Pacific Coast Groundfish Fishery Management Plan - Request for Comments - 10/1/10

75 FR 60868. Pacific Coast Groundfish Fishery Management Plan; Amendments 20 and 21; Trawl Rationalization Program - 10/1/10

75 FR 61102. Pacific Coast Groundfish Fishery; Inseason Adjustments to Fishery Management Measures. Final Rule - 10/4/10

75 FR 62098. Proposed Information Collection; Comment Request; Expanded Vessel Monitoring System Requirement in the Pacific Coast Groundfish Fishery - 10/7/10

	Dec	Jan	Feb	Mar	Apr	June
NEPA	NMFS staff	→	→	FEIS		
Spex Rule						
Am 16-5						
TIQ						

	Dec	Jan	Feb	Mar	Apr	June
NEPA	NMFS staff	→	→	FEIS		
Spex Rule	NMFS staff	→	→	→	**<u>NMFS</u>** ER-2011* FR-2012*	
Am 16-5						
TIQ						

	Dec	Jan	Feb	Mar	Apr	June
NEPA	NMFS staff			FEIS		
Spex Rule	NMFS staff				**NMFS** ER-2011* FR-2012*	
Am 16-5	Disapprove ?			PFMC	PFMC	PFMC
TIQ						

	Dec	Jan	Feb	Mar	Apr	June
NEPA	NMFS staff			FEIS		
Spex Rule	NMFS staff				**NMFS** ER-2011* FR-2012*	
Am 16-5	Disapprove ?			PFMC	PFMC	PFMC
TIQ	**NMFS** Em. Rule					

Agenda Item H.2.a
Supplemental NMFS Pacific Halibut Bycatch Report
(Website Distribution Only)
November 2010

Pacific Halibut Bycatch in the U.S. West Coast Groundfish Fishery from 2002 through 2009

Eliza Heery[2], Marlene A. Bellman[1], and Janell Majewski[1]

[1]West Coast Groundfish Observer Program
Fishery Resource Analysis and Monitoring Division
National Marine Fisheries Service

[2] Pacific States Marine Fisheries Commission
Northwest Fisheries Science Center
2725 Montlake Blvd E
Seattle, WA 98112

Publication Date: October 22, 2010

This document should be cited as follows:

Heery, E., M. A. Bellman and J. Majewski. 2010. Pacific halibut bycatch in the U.S. west coast groundfish fishery from 2002 through 2009. West Coast Groundfish Observer Program. NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Pacific halibut discard mortality estimates were provided for 2002 through 2009 and for all groundfish fishery sectors observed by the West Coast Groundfish Observer Program. These included:

- Limited Entry (LE) bottom trawl
- Non-nearshore fixed gear
- Nearshore fixed gear
- Pink shrimp trawl
- California halibut trawl

Final esitmates are shown in Table ES-1. Table ES-1 is synonymous with Table 18 in the report. The LE bottom trawl sector constituted the largest source of discard mortality of Pacific halibut among the sectors analyzed, followed by the non-nearshore fixed gear sector. Within non-nearshore fixed gear, the majority of estimated discard mortality occurred in the LE primary component, which consists of federally permitted vessels with teir quota fishing during the primary sablefish season from April through October. Specifically, bycatch rates were highest on LE sablefish primary vessels fishing with longline gear in the area north of Point Chehalis, Washington. A smaller amount of halibut mortality also occurred on open access (OA) vessels fishing with hook-and-line and pot gears in non-nearshore areas. The OA non-nearshore fixed gear sector was observed on a coastwide basis starting in 2007.

Table ES-1. 2002-2009 Pacific halibut discard mortality estimates for all sectors observed by the West Coast Groundfish Observer Program. Discard mortality rates were only applied in the LE bottom trawl and non-nearshore fixed gear sectors, for which there some information regarding survivorship was available.

	LE bottom trawl	Non-nearshore fixed gear			Nearshore fixed gear*	Pink shrimp*	CA halibut*
		LE primary	LE non-primary	OA			
2002	345	23	0.0	-	-	-	0.0
2003	124	32	0.0	-	0.0	-	0.0
2004	133	40	0.0	-	1.0	0.0	0.8
2005	287	37	0.0	-	2.2	0.1	0.0
2006	242	107	0.0	-	0.5	-	0.0
2007	209	21	0.2	2.9	0.1	0.2	0.1
2008	208	39	0.4	6.6	0.4	0.0	0.3
2009	251	50	0.0	6.4	1.3	0.0	0.0

* Discard mortality rate not applied
(-) Provided when there were insufficient observer data to estimate discard

Our results indicate that discard mortality of Pacific halibut increased from 2003 through 2006 and then dropped in 2007. In the last few years, discard mortality has increased gradually (Figure ES-1). Note that variance calculations are based on uncertainty in observer data only. Uncertainty in logbook and fish ticket data were not accounted for in this analysis and variance estimates provided here should thus be considered as minimum possible values.

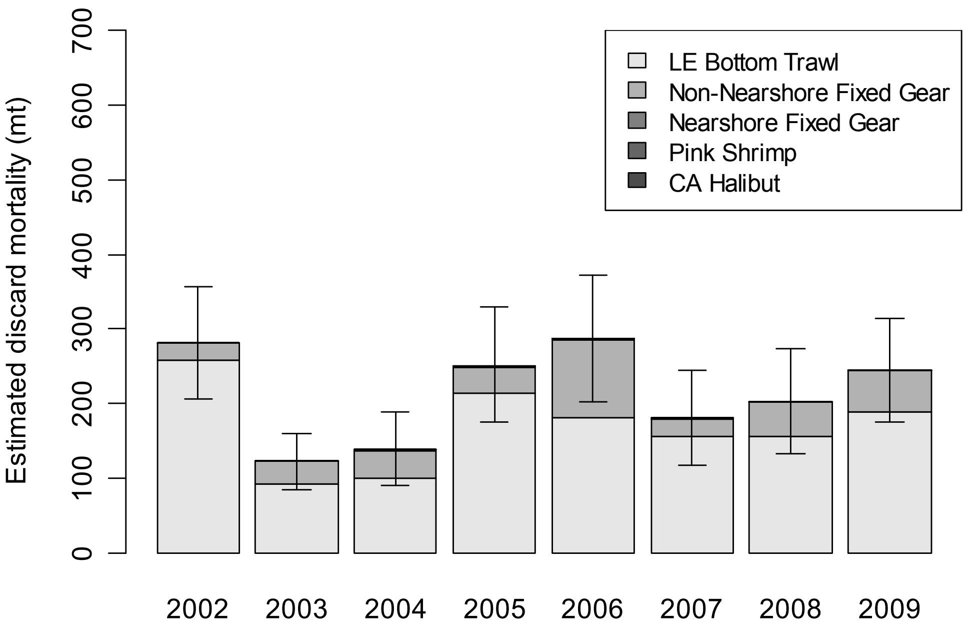


Figure ES-1. Total estimated discard mortality for 2002-2009 from all sectors observed by the West Coast Groundfish Observer Program. Estimates are not included in sectors and years where there were insufficient observer data.

In 2010, a comprehensive review of the methodology for Pacific halibut discard estimation led to several changes. In the LE bottom trawl sector, these changes resulted in higher estimates with smaller standard errors than those provided previously (Wallace and Hastie 2009). Specifically, LE bottom trawl estimates increased because of three factors: (1) The inclusion of observer and logboook data from California, which had previously been excluded from the analysis; (2) An alternative approach to adjusting logbook tow time to account for less than 100% logbook submission rates; and (3) A broader post-stratification scheme for observer and logbook data. All three factors had a role in increasing discard estimates. Standard errors decreased because of the shift to broader stratification of the data, which eliminated the need for averaging of discard ratios across strata and increased the sample size within each stratum.

There were two changes in discard estimation methodology for the non-nearshore fixed gear sector: (1) Directed Pacific halibut fishery landings were identified through an alternative approach to that used previously, (2) The discard mortality rate for pot gear was changed to 18% based on Pacific halibut mortality information from Alaskan groundfish fisheries. The impact of these changes on final estimates was minor.

The analysis was also expanded to estimate discard in the nearshore fixed gear sector, pink shrimp trawl fishery, and California halibut trawl fishery. Discard mortality rates were not applied to estimates from these sectors because of limited information regarding survivorship. Regardless of the mortality rate applied, Pacific halibut mortality in these sectors represents a very small component of the overall total.

INTRODUCTION

Pacific halibut (*Hippoglossus stenolepis*) is found in coastal waters throughout the North Pacific Region. Off the west coast of the United States, it inhabits continental shelf areas (< 150 fm) from Washington to central California (Clark and Hare 1998). This species has long supported a directed commercial fishery in the US and Canada, but it is also caught as bycatch in other fisheries that target demersal species inhabiting similar depths and seafloor habitat types. The primary objective of this report is to provide estimates of Pacific halibut bycatch in the U.S. west coast groundfish fishery from 2002-2009.

The west coast groundfish fishery is a multi-species fishery that utilizes a variety of gear types. The fishery harvests species designated in the Pacific Coast Groundfish Fishery Management Plan (FMP; PFMC 2008) and is managed by the Pacific Fishery Management Council (PFMC). There are 89 species listed in the groundfish FMP, including a variety of rockfish, flatfish, roundfish, skates, and sharks (see Appendix A). These species are found in both federal (> 3 Nm) and state waters (0-3 Nm). Groundfish are both targeted and caught incidentally by trawl nets, hook-and-line gears, and fish pots.

Under the FMP, the groundfish fishery is defined as consisting of four management components:

- Limited Entry (LE) – The LE component includes all commercial fishers who hold a federal limited entry permit. The total number of limited entry permits available is capped and permitted vessels are allotted a larger portion of the total allowable catch for commercially desirable species than non-permitted vessels.

- Open Access (OA) – The OA component includes commercial fishers who are not federally permitted. However, state agencies (California Department of Fish and Game and Oregon Department of Fish and Wildlife) have instituted permit programs for certain OA sectors.

- Recreational – This component includes recreational anglers who target or incidentally catch groundfish species.

- Tribal – This component includes native tribal commercial fishers in Washington state that have treaty rights to fish groundfish.

These four components can then be further subdivided into sectors based on gear type, target species, permits and various regulatory factors. Commercial LE and OA sectors have traditionally caught the largest quantities of groundfish and are observed by the West Coast Groundfish Observer Program (WCGOP).

The WCGOP was established in May 2001 by NOAA Fisheries (NMFS) in accordance with the Pacific Fishery Management Plan (50 CFR Part 660) (50 FR 20609). This regulation requires that all vessels that catch groundfish in the US EEZ from 3-200 miles offshore to carry an observer when notified to do so by NMFS or its designated agent. Subsequent state rule-making has extended NMFS's ability to require that California and Oregon vessels, which only fish in the 0-3 mile state territorial zone, also carry observers. WCGOP observers are stationed along the US west coast from Bellingham, Washington to San Diego, California.

The WCGOP's goal is to improve estimates of total catch and discard by observing shoreside groundfish sectors along the US west coast. Originally, the WCGOP focused observer effort in the LE bottom trawl and LE fixed gear sectors. In 2002, the WCGOP began deploying observers in open access sectors while increasing its coverage of the LE bottom trawl sector. In 2005, the WCGOP increased its coverage of the LE fixed gear sector, and in 2006, the WCGOP improved coverage of the nearshore sector. Currently, the WCGOP coverage goal is to maintain, at a minimum, 20% coverage in the LE bottom trawl and LE fixed gear fisheries by landings, while continuing to improve coverage in the open access sectors of the groundfish fishery. An observer coverage plan from the WCGOP is available at: www.nwfsc.noaa.gov/ research/divisions/fram/observer/observersamplingplan.pdf.

Pacific halibut is consistently caught as bycatch in two of the fishery sectors observed by the WCGOP: the LE bottom trawl sector and the sablefish (non-nearshore) fixed gear sector. The LE bottom trawl sector operates from the Canadian border to Morro Bay, California. Vessels in this sector must have a federal groundfish permit with a trawl endorsement. LE bottom trawl vessels range in size from 35 to 95 feet and fish throughout the year in a wide range of depths. Bottom trawlers often target species assemblages, which can result in diverse catch. A single groundfish bottom trawl tow often includes fifteen to twenty species. Fish size and weight of the total catch also vary widely. LE bottom trawl vessels deliver the portion of their catch that is marketable and permitted to be landed to shoreside processors. The portion of the catch that is prohibited by regulations or not marketable is discarded at-sea. Pacific halibut is considered a "prohibited species" in the LE bottom trawl sector, and all specimens caught as bycatch must be discarded.

The non-nearshore fixed gear fishery sector consists of 3 major components: the LE sablefish-primary, the LE sablefish non-primary, and the OA components. A federal groundfish permit is required to participate in either LE component. In addition, a tier endorsement is required to participate in the LE sablefish-primary component of the fixed gear sector. Although federal or state permits are not required to participate in the OA fixed gear sector, this portion of the fishery is subject to daily trip limit regulations set forth by PFMC. The same is true for LE non-primary vessels and for tier-endorsed LE vessels that have either reached their quota or are fishing outside of the sablefish primary season, which takes place from April to the end of October. Fixed gear vessels deploy pots and a variety of hook-and-line gears. However, the majority of directed sablefish effort is carried out using longlines. Pacific halibut is a "prohibited species" in the non-nearshore fixed gear sector with one exception. Prior to 2010, tier-endorsed (sablefish primary) vessels that fished with longline gear North of Point Chehalis, Washington (46° 53.30' N. lat.) were alloted some Pacific halibut landings. This regulation was modified in 2010 such that Pacific halibut can no longer be landed by any fixed gear vessels targeting FMP groundfish, due to a low total allowable catch for International Pacific Halibut Commission (IPHC) area 2A off the US west coast.

The WCGOP also observes the commercial nearshore sectors in Oregon and California, which target FMP groundfish typically in waters shallower than 50 fathoms. In addition, it provides observer coverage for the pink shrimp and California halibut trawl fisheries. Pacific halibut bycatch is rare in these fishery sectors, occuring on a maximum of 8% of observed tows/sets annually. Although we provide our best estimates of Pacific halibut fishing mortality in nearshore, pink shrimp and California halibut sectors, we point to previous WCGOP data reports to supply more comprehensive information about each of these sectors and their annual observed catch of Pacific halibut (www.nwfsc.noaa.gov/research/divisions/fram/observer/). For a list of groundfish sectors that are not covered by the program, see the description of observer coverage provided by Bellman et al. (2009) in the annual report on estimated total mortality of groundfish species.

Pacific halibut is managed by the IPHC, a body founded through treaty agreement between the US and Canada. The IPHC oversees the implementation of a directed Pacific halibut fishery on the US west coast using a derby fishery system with 10-hour openings. Many of the vessels that are observed by the WCGOP as part of the LE and OA fixed gear sectors participate in the directed fishery, but are not covered by the WCGOP while doing so.

This report combines discard estimates from both the LE bottom trawl sector and the non-nearshore fixed gear sector, which have historically been computed by different authors and presented in separate reports. The most recently published versions of each report are Wallace and Hastie (2009) for LE bottom trawl discard estimates, and Heery and Bellman (2009) for groundfish non-nearshore fixed gear discard estimates. The methodology employed in each of these reports was reviewed in 2010 and updates based on that review have been employed in the current analysis. In addition, we provide data summaries from the nearshore fixed gear sector, which catches and discards a small amount of Pacific halibut annually.

METHODS

Data sources

Data sources for this analysis include onboard observer data (from the WCGOP), trawl logbook data, and landing receipt data (referred to as fish tickets). The WCGOP coverage plan details program goals, vessel selection, observer coverage, and basic data collection (NWFSC 2006a). A list of fisheries in order of coverage priority and detailed information on data collection methods employed in each observed fishery can be found in the WCGOP manual (NWFSC 2006b).

The sampling protocol employed by the WCGOP is primarily focused on the discarded portion of catch. In order to ensure that the recorded weights for the retained portion of the observed catch are accurate, haul-level retained catch weights recorded by WCGOP observers are adjusted based on trip-level fish ticket records. This process is described in further detail in annual reports produced by the WCGOP (www.nwfsc.noaa.gov/research/divisions/fram/observer/ datareport/index.cfm) and was conducted prior to the analyses presented in this report.

Fish ticket landing receipts are completed by fish-buyers in each port for each delivery of fish by a vessel. Fish tickets are trip-aggregated sales receipts for market categories that may represent single or multiple species. They are issued to fish-buyers by a state agency and must be returned to the agency for processing. Fish ticket and species-composition data are submitted by state agencies to the Pacific Fisheries Information Network (PacFIN) regional database. Annual fish ticket landings data were retrieved from the PacFIN database and subsequently divided into various sectors of the groundfish fishery as indicated in Figure 1.

Logbook record-keeping is a state-mandated requirement for the LE groundfish trawl sector in Washington, Oregon, and California. A common-format logbook is used by all three states and completed logbook information is entered into state agency databases. The electronic data are then submitted by state agencies to the PacFIN regional database. Trawl logbook data for 2002 through 2009 were retrieved from the PacFIN database and processed further as indicated in Figure 1.

When Pacific halibut are encountered on an observed vessel, WCGOP observers select a random sample of specimens and record length and viability. Lengths are determined through visual estimation or direct measurement. Although we summarize length frequency data in this report, it is not incorporated in our analysis. Viabilities are collected according to a protocol from the IPHC, which is utilized by the North Pacific Groundfish Observer Program as well. Viability information was used to compute discard mortality rates (DMR) whenever possible.

Limited entry bottom trawl sector

Evaluation of strata

In previous reports on Pacific halibut bycatch in the LE bottom trawl sector, observer data were stratified by season, depth, area, and retained catch of arrowtooth flounder per tow hour. These strata were designated based on an analysis by Wallace (2000) that evaluated the significance of various categorical variables in determining the catch per tow hour of Pacific halibut. The data employed to conduct that analysis originated from the EDCP observer program and were collected between 1996 and 1998 (Wallace 2000). The efficacy of this stratification system was then verified annually (J. Wallace, personal communication, May 2010).

A substantial amount of observer data is now available for analysis, as the WCGOP has been collecting data on Pacific halibut bycatch in the LE bottom trawl sector since 2002. We applied the same methods as Wallace (2000) and used tree-based models (Clark and Pregion 1992) both to confirm previous findings and establish new stratification that could be used consistently across all years of observer data. Furthermore, we employed an additional constraint that all strata include data from three vessels or more. This constraint is required under the Magnuson-Stevens Fishery Conservation and Management Act (MSA) for confidentiality purposes, but also ensures a sufficient sample size in observer data for subsequent analyses. We recognize that strata in which no fishing occurred would presumably enhance the reliability of overall bycatch estimates expanded to the fleet-wide level, since a zero valued estimate has a variance of zero. However, the LE bottom trawl fleet has a wide spatial and temporal distribution (Figure 2) and isolating strata without any logbook or observer data records was not feasible.

Wallace (2000) evaluated the effectiveness of several variables at predicting observed catch-per-unit-effort (CPUE) of Pacific halibut, defined as the observed catch weight (kg) per tow hour. This response variable was defined in the same way as the bycatch ratio later applied to estimate fleet-wide bycatch amounts. Ratio estimators (Cochran 1977) have been widely used in bycatch estimation (Stratoudakis et al. 1999, Walmsley et al. 2007, Borges et al. 2005a). The method relies heavily on the assumption that bycatch is proportional to some metric or proxy of fishing effort, in this case tow duration (Rochet and Trenkel 2005). Rochet and Trenkel (2005) note that this assumption is often not supported by the data, and that in some cases, bycatch may vary nonlinearly or even be unrelated to the ratio estimator denominator. Variability in this relationship is quite high at the tow level (Borges et al. 2005b), and tows are not considered independent within the sampling framework used by the WCGOP. However, the explanatory variables that are generally thought to relate to Pacific halibut bycatch (latitude, depth, catch of other species) coincide with individual tows. Figure 3a demonstrates that on a coastwide basis and across all years observed, it is difficult to identify a clear relationship between Pacific halibut bycatch at the tow level and tow duration. To some extent the lack of an obvious relationship may be attributed to the fact that biomass and catchability are not constant over space and time (as $C/E = Bq$ and the plot includes observer data from all locations along this coast from 2002 through 2009). While we would expect to see a linear pattern within components of the data in which Pacific halibut biomass and catchability are constant, it is difficult to identify these components without a much more comprehensive understanding of the stock's dynamics. We do see a more linear pattern when the data are split out by latitude, depth, year, and month, and re-plotted. For instance, Figure 3b shows the relationship between catch and tow hours in May 2009, in the area north of Point Chehalis, Washington, on the continental shelf, between 50 and 250 fathoms. Most of the area within this range in which observed vessels are fishing is characterized by gradually sloping sandy bottom habitat. Within a single month over a consistent bottom type such as this, we might expect biomass and catchability to be relatively constant, and thus for the relationship between catch and effort to be linear. In relation to Pacific halibut bycatch, tow duration appears to vary in a similar way to other proxies of effort, such as retained catch of target species. Because of this, there was no apparent advantage to using an alternative denominator, and we therefore maintained the status quo of tow hours.

In accordance with methods by Wallace (2000), we plotted Pacific halibut CPUE in relation to latitude, depth, and season in order to identify natural breaks in the data. In this initial examination, Pacific halibut CPUE increased with increasing latitude, particularly in the area north of 47° N latitude. CPUE decreased with increasing depth, with a noticeable break between 100 and 150 fathoms, presumably caused by the lack of effort in this area as a result of spatial closures. These findings were in agreement with those from Wallace (2000), however, we were unable to distinguish seasonal patterns in the data.

We then examined the relationship between Pacific halibut CPUE and the retained catch of other species per tow hour, applying a log transformation to both variables. All FMP groundfish species were considered (Appendix A). The strongest relationships that were apparent graphically were with arrowtooth flounder, petrale sole, and lingcod. In addition, we found potential relationships with Pacific cod, skates, yellowtail rockfish and Pacific ocean perch. The retained catch per tow hour was thus considered as a potential level of additional stratification in subsequent steps.

A tree-based model (Clark and Pregion 1992) was applied to all potential stratification variables in order to identify breaks in the data that were most significant. A generalized linear model (GLM) was then used to evaluate the significance of each combination of variables, with Pacific halibut discard per tow hour as the response variable. A constraint was applied to ensure that strata contained at least 3 vessels and Akaike's Information Criterion (AIC) values from each run of the model were then compared. The variables and stratification lines supported by this process were as follows:

Variable	**Stratification**
Latitude	north / south of 47.1518° N. latitude
Depth	shallower / deeper than 60.5 fm
Retained catch of other species	greater than / less than 125 kg per tow hour of all species tested (arrowtooth flounder, petrale sole, lingcod, Pacific cod, skates, yellowtail rockfish, and Pacific ocean perch)

Season was excluded as a potential stratification variable, as it did not improve model fit. In order to make estimates relevant within a management framework, Point Chehalis, Washington (46° 53.30' N. lat.), the closest geographic coordinate used in groundfish management to the latitudinal break supported by the model, was employed to define latitudinal strata. Tows were stratified by depth as greater than or less than 60 fathoms. The AIC values associated with this adjusted model still demonstrated a considerable improvement over all other latitudinal and depth-based stratification schemes evaluated (except for that selected through tree regression, for which AIC was slightly lower) while maintaining the constraint that strata contain data from at least 3 vessels in all years. Table 1 summarizes observer coverage within each area and depth strata.

Bycatch estimation

Once the stratification scheme had been determined, we applied a deterministic approach to estimate bycatch of Pacific halibut in the LE bottom trawl sector. Through this approach, observed bycatch rates for Pacific halibut were directly expanded based on the total fleet effort (hours towed) (Table 1). Fleet effort was derived from trawl vessel logbooks.

Since logbooks are not available from 100% of the fleet, it was necessary to adjust logbook effort based on fish tickets, which are considered a more complete census of fleet-wide data and are legally binding documents. Washington Department of Fisheries and Wildlife (WDFW) calculates an expanded trawl effort amount to account for logbooks that were not submitted to the agency (Sampson and Crone 1997). Although this value has been used in previous reports on Pacific halibut bycatch in the LE bottom trawl sector (Wallace and Hastie 2009), we found that this data field was blank (did not contain a value) in some of the data when working at the tow level. Logbook effort for Washington, Oregon and California was instead adjusted based on the ratio of the total FMP groundfish catch reported on fish tickets to that reported in logbooks. This ratio was computed separately for each state and month and was then multiplied by the total tow hours from each haul associated with landings in that month and state:

$$r_{ap} = \frac{L_{ap}}{W_{ap}}$$

$$H_{adj_{tap}} = H_{tap} \times r_{ap}$$

where:
r_{ap} = adjustment ratio
L_{ap} = lbs of FMP groundfish recorded on fish tickets in state *a* and month *p*

W_{ap} = lbs of FMP groundfish recorded in vessel logbooks from state *a*, in month *p*
H_{tap} = logbook tow hours from tow *t*, which landed its catch in state *a* during month *p*
H_{adjtap} = adjusted logbook tow hours from tow *t*, which landed its catch in state *a* during month *p*

The adjustment ratio was then applied to logbook tow hours at the tow level in order to enable subsequent stratification of the data by area, depth, and CPUE of other species. Wallace and Hastie (2009) adjusted logbook tow hours based on an adjustment ratio that was computed for each port and month. In our evaluation, we found this approach to yield ratios with relatively small and highly variable numerators and denominators. Rather than averaging across port/month strata, we decided to aggregated logbook and fish ticket data at a higher level. The objective of adjusting logbook data was to account for submission rates of less than 100%. Since the logbook program is implemented at the state level and the data are entered into state databases, we decided to aggregate by state. Logbooks are submitted on a monthly basis (Sampson and Crone 1997) and change over time. We therefore maintained month as a variable used to aggregate data prior to computing adjustment ratios.

Previous reports on Pacific halibut bycatch in the LE bottom trawl fishery have focused on observed bycatch associated with vessels landing in Oregon and Washington only (Wallace and Hastie 2009). Some vessels from Oregon do fish and encounter Pacific halibut south of the California/Oregon border. A small amount of Pacific halibut is also caught in this area by vessels that are based in California and land their catch in California ports. The current analysis attempts to provide a comprehensive view of bycatch in the LE bottom trawl sector across all years in which observer data are available. Observer and logbook data from California were therefore included in our analysis.

LE bottom trawl vessels may hold a California halibut bottom trawl permit and participate in the state-permitted California halibut fishery. California halibut tows can occur on the same trip as tows targeting groundfish and were identified in logbook and observer data based on the following criteria: 1) the tow target was California halibut or 2) the tow target was nearshore mix, sand sole, or other flatfish, and the tow took place in less than 30 fathoms and south of 40°10’ N. latitude. All tows in the observer and logbook data that met at least one of the above criteria were removed from the LE bottom trawl dataset and included in bycatch estimation for the California halibut trawl fishery (see below). Whether in observer or logbook data, the tow target was typically determined by the vessel captain.

Next, both observer and logbook data were stratified based on the stratification scheme described in the previous section, with 2 area strata, 2 depth strata, and 2 CPUE strata. A discard ratio (R_{ij}) was then computed from all observed tows within stratum *i* and year *j* as:

$$R_{ij} = \frac{\sum_t y_{ijt}}{\sum_t x_{ijt}}$$

where:
y_{ijt} = observed discard of Pacific halibut (kg) in stratum *i* and year *j* during tow *t*
x_{ijt} = observed tow hours in stratum *i* and year *j* from tow *t*

The variance of R_{ij} was approximated by using the following equation (Cochran 1977):

$$Var(R_{ij}) = \left(\frac{\bar{y}_{ij}}{\bar{x}_{ij}}\right)^2 \left[\frac{s^2(y_{ijt})}{\bar{y}_{ij}^{\,2}} + \frac{s^2(x_{ijt})}{\bar{x}_{ij}^{\,2}} - \left(\frac{s^2(y_{ijt})}{\bar{y}_{ij}^{\,2}} \cdot \frac{s^2(x_{ijt})}{\bar{x}_{ij}^{\,2}}\right)\right]$$

where:
$\bar{y}_{ij}$ and $\bar{x}_{ij}$ = the means of y_{ijt} and x_{ijt}
$s^2(y_{ij})$ and $s^2(x_{ij})$ = the variances of y_{ijt} and x_{ijt}

This variance estimator is that which was employed by Pikitch et al. (1998) and is based on methods presented by Cochran (1977). Note that Var (R_{ij}) cannot be calculated when $x_{ijt} = 0$ or $y_{ijt} = 0$ for all tows. The lower and upper bounds of a 95% confidence interval were computed as follows:

$$l_{lower} = \frac{\bar{y}_{ij}}{\bar{x}_{ij}} - 1.96(\sqrt{Var(R_{ij})})$$

$$l_{upper} = \frac{\bar{y}_{ij}}{\bar{x}_{ij}} + 1.96(\sqrt{Var(R_{ij})})$$

In order to best support fishery management, variance and confidence intervals were calculated separately for data in each geographic area, depth, and CPUE stratum (Table 2). Variance estimates, therefore, do not relate back directly to the random stratified sampling framework employed by the WCGOP, where vessels within each port group were the sampling unit. This may introduce bias into variance estimates. Although variance computed from the observer data is still provided in the same way it has been in previous reports (Wallace and Hastie 2009), it should be considered with caution.

Discard ratios were then multiplied by the total adjusted tow hours (H_{adj}) within each stratum to produce as series of initial bycatch estimates (B_{ij}):

$$B_{ij} = R_{ij} \times \sum_t H_{adj_t}$$

The product B_{ij} represents the total, or gross estimated bycatch weight within stratum *i* and year *j*. This includes all discarded fish, regardless of whether the fish survived after being returned at sea.

Viability Analysis

In order to compute the total mortality of discarded Pacific halibut, discard mortality rates were computed through an additional viability analysis (Tables 3 and 4). WCGOP observers collect viability data on discarded Pacific halibut in the LE bottom trawl fishery using the condition key provided in Appendix L of the WCGOP manual (NWFSC 2006b). Observations of several condition characteristics are used to assign each fish that is evaluated to one of three categories: Excellent, Poor, or Dead (Williams and Chen 2004).

In order to account for the impact of size on survivorship, we computed a weighted average mortality rate for each condition category. Length measurements associated with each viability record were converted to weight based on the IPHC length weight relationship:

$$W = 6.921 \times 10^{-6} \cdot L^{3.24}$$

where:
L = fork length (cm)
W = weight (lb, head off, eviscerated)

A discard mortality rate for each condition category was then computed as the proportion of sampled weight in that category multiplied by a category-specific mortality rate:

$$DMR_{csj} = m_c \times P_{csj}$$

where:
m_c = mortality rate for condition c (Excellent, Poor, or Dead)
P_{csj} = proportion of sampled weight (W) in condition c, in stratum s in year j
DMR_{csj} = discard mortality rate in condition c, in stratum s in year j

Mortality rates used for each of the condition categories (m_c) are as follows (Clark et al. 1992):

m_c	**Rate**
m_{exc}	0.20
m_{poor}	0.55
m_{dead}	0.90

These rates are originally based on mortality data collected by Hoag (1975), who found some survivorship among fish in the dead condition category. Discard mortality rates for each condition category c and stratum s were then multiplied by gross discard estimates to compute total estimated discard mortality:

$$F_{ij} = \sum_c B_{ij} \times DMR_{cjs}$$

where:
F_{ij} = total estimated discard mortality in stratum i in year j

The variables used to define strata for discard mortality rates (s) and gross discard estimates (i) differed because of differences in the way viabilities and gross estimates are stratified. Viability data are collected from only a subsample of the Pacific halibut that observers encounter. Stratification of viability data by latitude, depth, CPUE strata, and year results in very small sample sizes. Based on previous evaluations by Wallace and Hastie (2009), we expect that survivorship of Pacific halibut in the trawl fishery is most directly affected by the length of the tow and the amount of catch that fills the net. These variables are not part of the bycatch ratio stratification process described in previous sections, and their use in stratifying viability data would make it difficult to then apply discard mortality rates to initial gross estimates of bycatch. We found that tow duration was directly related to depth (Figure 4), one of the variables that was used to stratify discard ratios and initial gross discard estimates. This relationship is attributed to the time it takes to fish trawl gear in deeper versus shallow waters and the smaller amount of consistent seafloor type that is available for trawling in shallow areas. Smaller areas of seafloor are available both because of the bottom habitat type and because of smaller trip limits associated with areas shoreward of the trawl Rockfish Conservation Area (RCA). In shallower areas, vessels are more likely to fish with a larger number of short tows, compared with vessels fishing a smaller number of longer-duration tows in deeper areas. Since depth and tow duration appeared to co-vary, we used only depth to stratify viability data from each year (Tables 3 and 4). This essentially assumed that the physical condition of discarded Pacific halibut was not related to tow location.

Viability data are available from 2004 onward. For 2002 and 2003, we applied a discard mortality rate computed by summing the averages weights in each condition category across all years. Final estimates of Pacific halibut bycatch and discard mortality are presented in Table 5. In response to requests from the Pacific Fishery Management Council's Groundfish Management Team (GMT), we have Table 5 also includes the estimated mortality of legal-sized halibut. This was computed by applying the proportion of sampled weight in each depth stratum that was from legal-sized fish (82 cm or larger) to initial estimates. Viabilities were then applied to gross legal-sized discard estimates in the same manner described above. Results from our review of stratification alternatives analyzed for the LE bottom trawl sector are summarized in Table 6 for reference.

Length frequencies

The length frequency distribution for Pacific halibut in the 2009 trawl fishery is provided as supplementary information in Table 7. Pacific halibut pose unique challenges for observer sampling. When catch from a trawl net is dumped on deck, most vessels' crew will scan the catch for Pacific halibut and immediately return them to sea, which is termed "presorting". Vessels presort Pacific halibut to increase the likelihood of survival of the discarded fish. In addition to the need for quickly returning Pacific halibut to the sea in order to enhance survival, halibut are often too heavy and/or awkward to weigh in observer baskets. Therefore, in most circumstances observers visually estimate the length of the halibut in ten-centimeter units (40cm, 50cm , 60cm, etc.), which are later converted to weight using the IPHC length/weight conversion table. Observers also have the option of directly measuring a Pacific halibut and then converting the measurement to weight using the IPHC length/weight conversion table or actually weighing the individual fish, but these rarely occur.

Appendix B provides the observed length frequency distributions of discarded Pacific halibut for 2004 through 2009 that have been weighted based on the ratio of total estimated halibut discard weight to the weight of halibut that was measured in each stratum (see Appendix B for further details). Since size-specific mortality rates are not available, we were not able to compute the length frequency distribution of discarded fish that died. However, we have summarized the proportion of length measurements in each condition category (Excellent, Poor, and Dead) in Appendix B to inform size-specific modeling of mortality. The frequency of sampled fish within each condition category was weighted in the same manner as length frequency distributions and then summarized for each 2 cm length bin.

Non-nearshore fixed gear sector

Evaluation of appropriate strata

Testing of alternative stratification schemes indicated that latitude and gear type were the most important variables with respect to Pacific halibut bycatch in the fixed gear fishery. The WCGOP samples each fixed gear sector through a separate random selection process, with LE primary permits receiving the highest level of coverage and OA fixed gear the lowest. Given this sampling structure and anticipated differences in variance from one sector to the next, we chose to maintain sector as a stratification variable in our analysis. Bycatch estimates were therefore produced separately for each sector and gear combination. Latitudinal strata were also applied whenever there were sufficient data and the added stratification was shown to significantly improve the fit of predicted bycatch amounts to the amounts observed.

The largest number of Pacific halibut bycatch events observed in the fixed gear fishery was on LE primary vessels fishing off of Washington with longline gear. For this sector/gear combination there were sufficient data to evaluate the efficacy of additional variables for predicting bycatch. We considered a variety of additional parameters, including latitude, state of landing, season, month, and bimonthly period. Each of these was used as an explanatory variable in a generalized linear model, with Pacific halibut bycatch (kg) per set (log-transformed) as the response variable. We then compared the AIC value from each model run. For continuous variables such as latitude, tree-based models (Clark and Pregion 1992) were also applied to identify stratification lines that would result in the best model fit.

For the LE primary longline sector, latitude produced the lowest AIC values among the variables tested. Results from the tree regression model supported the application of two latitudinal breaks: at 44˚ 36.54' N. latitude and 47˚ 48.33' N. latitude. While these breaks produced the lowest AIC value from our model, this AIC value was only slightly smaller than that resulting from a single latitudinal break at Point Chehalis, Washington (46° 53.30' N. lat.). Point Chehalis was used in previous estimates of Pacific halibut bycatch in the LE primary longline sector because of its relevance to groundfish management and its apparent ability to split out higher bycatch rates off the northern coast of Washington (Heery and Bellman 2009). In this analysis, we found that coefficient of variation (CV) estimates for Pacific halibut discard ratios were lower when a latitudinal break was used at Point Chehalis. CV values associated with latitudinal strata at 44˚ 36.54' and 47˚ 48.33' N. latitude were generally about 2 times larger than CV values computed using the Point Chehalis break. This is due to the smaller sample size in each stratum that results from using more than one latitudinal break.

Given these findings, we decided to maintain the same stratification in this analysis as was used previously by Heery and Bellman (2009) for the LE primary longline sector. Similar evaluations were attempted for the other fixed gear sectors to identify whether variables other than sector and gear might be appropriate as additional strata. While there was a sufficient sample size to apply additional spatial or temporal breaks in some cases, the application of these variables as strata did not improve the fit of our model to an extent that justified their use. Thus, we maintained the same stratification for the other fixed gear sectors that was used previously by Heery and Bellman (2009).

Bycatch estimation

A deterministic approach was used to estimate Pacific halibut bycatch for all sectors of the non-nearshore fixed gear fishery. Bycatch ratios were computed from observer data as the discarded weight of Pacific halibut divided by the retained weight of either sablefish or all FMP groundfish (except Pacific hake), depending on the sector (Table 10). A complete listing of groundfish species included in the Groundfish Fishery Management Plan that were used to compute and expand ratios is provided in Appendices A and B. Bycatch ratio denominators were identified for each sector of the non-nearshore fixed gear fishery based on the targeting behavior of that sector. Bycatch ratios were then multiplied by the total sector landed weight of either sablefish or FMP groundfish (except Pacific hake), corresponding with the denominator used to compute the observed discard ratio for each sector. This provided an expanded gross estimate of Pacific halibut bycatch for each sector (Table 11). A discard mortality rate (discussed below) was then applied to compute estimated total mortality.

Fish tickets with landings of sablefish using fixed gear were partitioned into the three commercial fixed-gear sectors (LE sablefish primary, LE sablefish non-primary, and OA fixed gear) through the following process. Commercial fixed-gear fish tickets were first divided out by whether the vessel had a federal groundfish permit (limited entry) or no federal groundfish permit (open access). OA fish tickets were placed in the OA fixed gear sablefish sector. Next, LE fish tickets were separated based on whether the vessel's federal groundfish permit(s) had a sablefish endorsement with tier quota for the primary season or if it was not endorsed (also referred to as 'zero' tier). Fish tickets for all LE sablefish vessels with tier endorsements that were operating within this period and within their allotted tier quota were placed in the LE sablefish-endorsed primary sector. If LE sablefish-endorsed vessels fished outside of the primary season (November through March) or made trips within the season after they had reached their tier quota, the fish tickets were placed in the LE sablefish non-primary sector. In addition, fish tickets from non-endorsed LE vessels were also placed in the LE sablefish non-primary sector.

Further processing of fish tickets was then conducted to identify landings from the directed Pacific halibut fishery and remove them from the non-nearshore fixed gear analysis. The directed Pacific halibut fishery occurs for only a few days each year, during 10-hour openings that are designated by the IPHC. In 2009, there were two such openings on June 24th and July 8th. LE and OA fixed gear vessels that typically target groundfish can participate in the directed fishery. For most fixed gear vessels, (other than LE primary longline vessels north of Point Chehalis) this is the only time during which they are allowed to land Pacific halibut. Fish tickets that included Pacific halibut landings within 4 days of a directed fishery opening were considered to be part of the directed fishery and not part of the non-nearshore fixed gear fishery targeting federal FMP groundfish. These fish tickets were removed prior to our analysis. This approach may have resulted in the removal of some non-directed fishery landings north of Point Chehalis, but any bias introduced by this step is considered to be extremely small given the short time period across which fish tickets were removed. In the previous report on Pacific halibut discard in the non-nearshore fixed gear fishery, derby fish tickets were identified as those on which that largest landings came from Pacific halibut. This filtering step was applied to the area north of Point Chehalis only. Estimates from the previous report for 2002-2008 are maintained in the tables (Tables 8-12) presented here for comparison purposes.

The WCGOP observes the non-nearshore groundfish fixed gear sectors in the following order of priority: LE sablefish-endorsed primary season, the LE non-sablefish-endorsed ('0' tier) sector, and the OA fixed-gear sector. LE sablefish-endorsed vessels that fish outside of the primary season or that have reached their tier quota in the primary season are not observed. For more information see the most recent WCGOP non-nearshore fixed gear report (NWFSC 2009).

WCGOP observer data were stratified according to sector and gear type (longline and pot/trap). As discussed earlier, one additional latitudinal stratification at Point Chehalis, Washington (46° 53.30' N lat.) was used for the LE sablefish-endorsed longline sector. As was discussed earlier, some retention of Pacific halibut was allowed in the LE sablefish-endorsed primary season in the area north of Point Chehalis up until 2010, from May through the end of October of each year. The regulation allowing for Pacific halibut landings north of Point Chehalis was in place throughout the time period of data included in this report, with some slight annual differences in the weight of Pacific halibut which could be retained. This was the only latitudinal stratification incorporated into our analysis and was only applied to the LE sablefish-endorsed primary sector. Discard amounts provided for the other two fixed gear sectors represent coastwide estimates.

The number of observed trips, sets, and vessels are summarized for each sector, gear type and area (where applicable) in Table 8. Table 9 provides the landed weight of sablefish and FMP groundfish (excluding Pacific hake) used as a measure for expanding discard from observed trips to the entire fleet. Observed discard ratios (also in Table 9) were calculated by sector, gear group and area based on the following equation:

$$\hat{D}_s = \frac{\sum_t d_{st}}{\sum_t r_t} \times F_s$$

where:
s: strata (sector / gear group / area)
t: observed sets
d: observed discard (kg) of Pacific halibut
r: observed retained weight (mt) of sablefish or all FMP groundfish except Pacific hake
F: weight (mt) of retained sablefish or all FMP groundfish excluding Pacific hake recorded on fish tickets in strata *s*
$\hat{D}_s$ *:* Discard estimate for strata *s*

For all sector/gear/area strata, except the LE non-primary longline sector, discard ratios were calculated by dividing the stratum discard weight of Pacific halibut by the retained catch weight of sablefish. Retained groundfish was used as the ratio denominator for the LE non-primary longline sector, rather than sablefish weight alone, because this sector targets a wider range of deepwater species. A broader denominator was therefore necessary in order to effectively capture the level of fishing effort in this sector. Values provided in the tables (Tables 8-12) for this report are identical to those provided in earlier years, but with updated information for 2009. Please refer to earlier reports for further details of data pooling and discard ratios in prior years of observer coverage.

Where FMP groundfish (excluding Pacific hake) was used to compute discard ratios, any retained weights that were recorded by the observer but that did not appear on fish tickets were excluded from the denominator. This was necessary to prevent double-counting associated with differences in the species codes used by observers and processors. For instance, while observers may record rockfish catch at the species level, various species of rockfish are often grouped, weighed, and recorded together on the fish ticket by the processor under a grouped species code such as NUSP - northern unspecified slope rockfish. In some cases, this difference in species coding prevents observer and fish ticket weights from being matched and adjusted properly. Species coding on fish tickets varies considerably between processors and over time, and it is not possible to make assumptions regarding which individual observer-recorded species likely coincide with species grouping codes on fish tickets. Instead, by using only the retained groundfish weight from fish tickets in discard ratio denominators, we prevent double-counting of retained weights. This is not a factor when using a single species in the denominator, such as sablefish, as any retained weights in observer and fish ticket data that share the same species code will match and adjust properly.

In each stratum, the observed discard ratio (Table 9) was multiplied by the fish ticket retained weight of sablefish or all FMP groundfish species (excluding Pacific hake). Figure 5 demonstrates how each fishery sector/gear, expansion factor, and observed discard rate were used. This provided an expanded gross discard estimate for each stratum. If landings were made by a fixed gear sector for which there were no or very few WCGOP observations, the most appropriate observed discard ratio was selected and applied to those landings based on similarities in the fishery management structure, fishing and discard behavior, and the gear fished. The LE sablefish non-primary sector landed 18 mt of FMP groundfish with pot gear in 2009, but this portion of the fleet was not observed by the WCGOP program. Given similarities in gear type and catch composition, OA fixed gear pot observations were selected as the most appropriate source of information for an observed discard rate to apply to those landings by vessels fishing with pots in the LE sablefish non-primary sector (Figure 5).

Discard mortality rates

Once an initial gross estimate of discard had been produced, this value was multiplied by a discard mortality rate to generate a final discard mortality estimate (Table 12 and Figure 6). Ideally, discard mortality would have been approximated based on viabilities in a manner similar to the approach used for the LE bottom trawl sector. WCGOP observers do record viability as Pacific halibut are discarded from longline vessels. However, much of the time, Pacific halibut are removed from the line before being brought onboard. This is to ensure safety, as longline vessels are often small, and to have the least possible impact on Pacific halibut survivorship. Because these fish are not typically brought onboard, the observer is not able to effectively assess viability or gain a random sample from Pacific halibut catch. Although viabilities from pot gear would be appropriate to use in estimating discard mortality, bycatch of Pacific halibut in pot gear is infrequent and the sample size of viability data from this gear type was too small to utilize in this analysis.

Pacific halibut viabilities from the non-nearshore fixed gear fishery were not used in our analysis. Discard mortality rates therefore had to be identified through other means. Review of the literature on Pacific halibut bycatch revealed little that could be applied to the entire discard estimate. Several studies have examined the survivorship of Pacific halibut in various conditions (Kaimmer and Trumble 1998, Trumble et al. 2000). However, without any information on the state of Pacific halibut that were being discarded, the findings from these examinations could not be put to use.

Instead, we relied on discard mortality rates computed for groundfish fisheries off Alaska (Williams 2008). An 18% discard mortality rate was applied to estimates for pot gear, coinciding with the DMR used for the sablefish pot CDQ fishery in Alaska. For longline gear, we used a discard mortality rate of 16%, an average of DMRs over all years for the Bering Sea/Aleutian region longline fishery (Williams 2008).

For additional context, Table 13 provides the length frequency distribution of Pacific halibut from visual estimates and actual lengths measured in the LE sablefish primary sector. Table 14 presents the proportion of sampled Pacific halibut discard in the non-nearshore fixed gear sector that was of legal (≥ 81 cm) and sublegal (< 81 cm) size. The majority of Pacific halibut lengths recorded in this fishery have been collected through visual length estimation, during which observers round to the nearest 10 cm. In other words, specimens that are 76 cm and 82 cm are both visually estimated to be 80 cm. With this level of resolution, it was not possible to compute the exact proportion of sublegal versus legal Pacific halibut from visually estimated lengths. Visual estimates were instead summarized in the manner in which they are recorded; with sublegal and legal sized halibut falling within the 75-84 cm length bin. Actual length measurements are available for 138 Pacific halibut from September 2003 through December 2009. Although sublegal versus legal percentages were computed from this data, actual length measurements do appear to contain a higher frequency of smaller individuals than visual estimates (Figure 7).

Other fishery sectors

Pacific halibut was also observed in the nearshore fixed gear sector and the pink shrimp and California halibut trawl fisheries. Bycatch estimates for these three fishery sectors were computed based on the following equation:

$$\hat{B} = \frac{\sum_t b_t}{\sum_t r_t} \times F$$

where:
b: observed discard (kg) of Pacific halibut on set/tow *t*
r: observed retained weight (mt) of target species on set/tow *t*
F: weight (mt) of retained target species
$\hat{B}$ *:* Bycatch estimate

The nearshore fishery targets a variety of groundfish species that inhabit areas shallower than 50 fathoms. All species included in the nearshore target group as listed in Appendix D were included in the denominator when calculating bycatch ratios for the nearshore fixed gear sector. Pink shrimp and California halibut were considered the target species in their respective fisheries.

Tables 15, 16 and 17 present the resulting bycatch estimates for the nearshore fixed gear sector, pink shrimp trawl fishery, and California halibut trawl fishery. Discard mortality rates were not applied to bycatch estimates for these fishery sectors due to a lack of information regarding survivorship. Note that the California halibut trawl fishery consists of 2 components: a limited entry sector and an open access sector. For more information regarding the differences between these 2 components, see annual data reports published by the WCGOP (www.nwfsc.noaa.gov/research/divisions/fram/observer/).

RESULTS

Limited entry bottom trawl sector

Gross bycatch estimates and total discard mortality estimates for the 2002-2009 LE bottom trawl sector are provided in Table 5. Estimated Pacific halibut discard mortality was highest in 2002 and then peaked again in 2005. Discard mortality decreased after 2005, but increased in 2009 to 251 mt. Fluctuations have occurred while trawl effort in recent years has gradually increased, from 56,016 tow hours in 2004 to 85,047 tow hours in 2009. The combination of these two factors has led to a gradual decline in mortality (kg) per tow hour since 2005, from 4.7 in 2005 to 2.8 in 2008. Mortality per tow hour increased slightly in 2009 to 3.0 kg per tow hour (Table 5). Estimates prior to 2004 for the LE bottom trawl sector were computed using viability data from 2004 through 2009, as viabilities from earlier years were not available.

In previous reports on Pacific halibut bycatch in the LE bottom trawl sector, discard was estimated based on observer, logbook, and fish ticket data from Washington and Oregon only (Wallace and Hastie, 2009). Although observer and logbook data were compiled from vessels that fished as far south as 40.667° N. latitude, only those that returned to Oregon or Washington to land their catch were included. Pacific halibut is caught in small amounts off of Northern California by both Oregon- and California-based vessels. We therefore chose to include observer, logbook, and fish ticket data from vessels landings in California in our analysis.

Despite differences in the stratification scheme and the base dataset used in this and previous reports, discard mortality estimates were similar. Estimates from our analysis differed from those reported previously by 11 to 25%, with the greatest difference occurring in 2007. Mortality estimates presented in this report for 2005 through 2008 are higher than previously reported values (Wallace and Hastie 2009), which would be expected given the inclusion of data from California. Interestingly, in 2004, our mortality estimate for Washington, Oregon, and California combined was actually lower than previously reported estimates for Washington and Oregon only. This difference is attributed to differences in stratification. Earlier reports employed a finer level of stratification and averaged discard ratios for strata with little to no observer data records. We have not made comparisons with previous estimates for 2002 and 2003, as Wallace and Hastie (2009) used a 50% mortality rates to estimate total discard mortality in these years.

Our confidence intervals are derived from uncertainty in observer data only. The stratified random sampling design employed by the WCGOP selects vessels for coverage within each port group and bimonthly period. This approach provides the best logistical scenario for the implementation of the program and appears to achieve good spatial and temporal coverage of the fleet (Figure 2). However, this framework differs from the post-stratification scheme used in this analysis. Uncertainty estimated from post-stratified data can be biased, and should be used with caution. For this reason, and because of uncertainty that has not been accounted for in fish ticket or logbook data, the confidence intervals we provide should be considered as minimum values.

Regardless of the method used to stratify observer and logbook data or the discard mortality rate applied to gross estimates, the trend in Pacific halibut bycatch mortality in the LE bottom trawl sector is consistent. Table 6 provides the estimates resulting from 5 alternative stratification schemes. The use of state of landing instead of latitude appears to result in more extreme peaks in discard estimates. However, the differences are minimal, particularly given the size of the 95% confidence intervals for each set of estimates.

Non-nearshore fixed gear sector

Estimated discard mortality of Pacific halibut in the LE sablefish primary longline sector increased from 2008 to 2009. To some extent, this increase was associated with greater fishing effort for sablefish, both north and south of the Point Chehalis line. In total, landings from the LE sablefish primary longline sector increased to 1402 mt, compared with 1048 mt in 2008. In addition, however, the discard ratio for Pacific halibut computed from observer data for the area north of Point Chehalis was noticeably larger than in 2008 (Table 9). In other words, more Pacific halibut was discarded in relation to the amount of sablefish landed. This does not appear to be associated with any increase in the rate at which Pacific halibut was encountered. In fact, a smaller percentage of observed trips, sets, and vessels had records of Pacific halibut catch in 2009 than was typically documented in previous years (Table 10). Instead, the large discard rate seems to be best explained by the increased frequency with which vessels chose to discard this species. As mentioned previously, some retention of Pacific halibut was allowed in the LE primary longline sector operating north of Point Chehalis. However, all Pacific halibut observed in this area in 2009 were discarded. Conversely, only 87% of the observed halibut weight was discarded in 2008 (Table 10).

While the increase in estimated discard of Pacific halibut in the LE sablefish primary longline sector thus appears to be associated changes in discard behavior among fishermen, it is also important to note that observer coverage in this sector was considerably lower in 2009. The 2009 sablefish primary season coincided with the end of a selection cycle, a period defined as the length of time required for the WCGOP to observe all vessels in the fleet. In 2009, there were a small number of vessels remaining for selection. This combined with other logistical constraints resulted in the coverage of only 9 vessels, compared with 18 in the previous year. Overall, WCGOP observed only 8.7% of the sablefish that was landed by the LE sablefish primary sector. This low level of observer coverage introduces a considerable degree of uncertainty into our final discard estimates.

Discard of Pacific halibut in other non-nearshore fixed gear sectors was mostly consistent with estimated discard amounts in previous years. Gross estimated discard in the LE primary pot sector decreased from 2008 to 2009, but remained within a range comparable to that estimated for earlier years. Among the non-primary fixed gear sectors (LE and OA), OA fixed gear vessels fishing with hook-and-line gears had the largest amount of Pacific halibut mortality. Discard mortality in this sector was 6.4 mt, compared with 6.6 mt in 2008. Effort in the OA fixed gear sector increased noticeably in 2009, with sablefish landings nearly doubling from annual landings amounts in 2007 and 2008. This did not affect discard estimates however, as the observed discard rate for Pacific halibut in 2009 was lower than in previous years (Table 9).

A large source of uncertainty in our estimates of Pacific halibut discard mortality on non-nearshore fixed gear vessels is the actual discard mortality rate applied to initial gross estimates that are computed from observer data. A small sample size of observed viability data are available from sablefish vessels fishing with pots, but not enough to be used in discard mortality estimation. Instead, we relied on findings from observed pot vessels in Alaska that assign specimens to the same condition codes used for trawl gear and then apply the discard mortality rates assumed by Williams (2008). This informed our decision to increase the discard mortality rate applied to pot estimates to 18% from 16%. As more viability information is collected by WCGOP observers from pot vessels, we intend to apply this directly to compute discard mortality in a manner consistent with methods of Williams (2008).

Just as for trawl gear, discard mortality rates have been determined experimentally for Pacific halibut caught with longline gear (Kaimmer and Trumble 1998, Trumble et al. 2000). In order to apply these rates, Pacific halibut caught on longlines are assigned to one of four condition categories (minor, moderate, severe, and dead.) based on the extent of their injuries at the time of release. Kaimmer and Trumble (1998) first derived discard mortality rates for each of these categories using mark-recapture data. Their rates were later updated by Trumble et al. (2000) to account for hook sizes that are more consistent with gear used on the West Coast for commercial purposes.

For reasons described earlier, Pacific halibut were infrequently brought onboard observed fixed gear vessels from 2002 to 2009, resulting in a small and potentially biased sample of viability data. Mortality rates specified by Trumble et al. (2000) cannot therefore be used in conjunction with these data to assess overall discard mortality. However, changes in WCGOP data collection protocol as of 2010 should allow observers to spend more of their time on fixed gear vessels collecting a random sample of Pacific halibut from which to gather viability data. These will be employed to evaluate discard mortality as soon as they become available. In the meantime, discard mortality rates of 16% for longline gear and 18% for pot gear (Williams 2008) are thought to be the best option available currently.

Other fishery sectors

Observed bycatch amounts of Pacific halibut in other fishery sectors were very small. Even without the application of discard mortality rates, bycatch estimates for the nearshore fixed gear sector, pink shrimp trawl fishery, and California halibut trawl fishery made up a minor portion of our total mortality estimate for Pacific halibut. Bycatch estimates provided in Tables 15, 16, and 17 are not intended to represent mortality values, as rates of discard mortality for these sectors are not available.

SUMMARY & CONCLUSIONS

- Estimated discard mortality in the LE bottom trawl sector fluctuated over the study period, with peaks in 2002, 2005, and 2009.

- Estimated mortality per tow hour of Pacific halibut in the LE bottom trawl sector has declined steadily since 2005.

- Discard mortality estimates were produced for the LE bottom trawl sector using data from Washington, Oregon, and California. Total annual estimates were 11 to 25% larger than previously reported estimates for 2004 through 2008 from Wallace and Hastie (2009), which were derived from Washington and Oregon data only.

- Estimated discard mortality in the LE and OA sablefish fixed gear sector fluctuated over the study period, with the largest peak of 107 mt in 2006, and smaller peak in 2009, at 56 mt.

- Within the sablefish fixed gear sector, LE sablefish primary vessels had the largest amount of Pacific halibut discard, particularly in the area north of Pt Chehalis, WA.

For a complete list of groundfish sectors, including those for which bycatch estimates are not provided in this report, see Bellman et al. (2009).

ACKNOWLEDGEMENTS

The authors gratefully acknowledge the hard work and dedication of observers from the West Coast Groundfish Observer Program, as well as all other observer program staff. We would like to thank Gregg Williams for his feedback and guidance on several aspects of this analysis. We also thank Jim Hastie and John Wallace for their comments and Tal McGowan for his help in processing observer biological data in preparation for this report.

REFERENCES

Bellman, M.A., E. Heery, and J. Majewski. 2009. Estimated discard and total catch of selected groundfish species in the 2008 U.S. west coast fisheries. West Coast Groundfish Observer Program. NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

Borges, L., Rogan, E., Officer, R., 2005a. Discarding by the demersal fishery in waters around Ireland. Fisheries Research 76: 1-13.

Borges, L., Zuur, A.F., Rogan, E., Officer, R., 2005b. Choosing the best sampling unit and auxiliary variable for discard estimations. Fisheries Research 75: 29-39.

Clark, L. A. and D. Pregibon. 1992. Tree-based models. *In* Chambers, J. M. and J. M. Hastie (eds). Statistical models in S. pp. 317-419. Wadsworth and Brooks, Pacific Grove, California.

Clark, W.G., S. H. Hoag, R. J. Trumble, and G. H. Williams. 1992. Re-estimation of survival for trawl caught halibut released in different condition factors. International Pacific Halibut Commission, Report of Assessment and Research Activities 1992: 197-206.

Clark, W. G. and S. R. Hare. 1998. Accounting for bycatch in management of the Pacific halibut fishery. Journal of Fisheries Management 18: 809-821.

Cochran, W.G., 1977. Sampling techniques. John Wiley & Sons, New York. 155 pp.

Heery, E. and M. Bellman. 2009. Observed and Estimated Total Discard of Pacific Halibut in the 2002-2008 U.S. West Coast Groundfish Non-Nearshore Fixed Gear Fishery. NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

Hoag, S. H. 1975. Survival of Halibut Released After Capture By Trawls. International Pacific Halibut Commission, Scientific Report No. 57, 18 p.

Kaimmer, S. M. and R. J. Trumble. 1998. Injury, condition, and mortality of Pacific halibut bycatch following careful release of Pacific cod and sablefish longline fisheries. Fisheries Research 38: 131-144.

Northwest Fisheries Science Center (NWFSC). 2006a. Observer coverage plan: Sampling plan and logistics for the West Coast Groundfish Observer Program. NOAA, West Coast Groundfish Observer Program. NWFSC, 2725 Montlake Blvd E., Seattle, WA.

Northwest Fisheries Science Center (NWFSC). 2006b. West coast groundfish observer training manual. NOAA, West Coast Groundfish Observer Program. NWFSC, 2725 Montlake Blvd E., Seattle, WA.

Northwest Fisheries Science Center (NWFSC). 2009. Data report and summary analyses of the U.S. west coast non-nearshore fixed gear groundfish fishery. West Coast Groundfish Observer Program. NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

Pacific Fishery Management Council (PFMC). 2008. Pacific coast groundfish fishery management plan. PFMC, 7700 NE Ambassador Place, Suite 100, Portland, OR.

Pikitch, E.K., Wallace, J.R., Babcock, E.A., Erikson, D.L. Saelens, M., and G. Oddsson. 1998. Pacific halibut bycatch in the Washington, Oregon, and California groundfish and shrimp trawl fisheries. North American Journal of Fisheries Management. 18: 569-586.

Rochet, M-J., Trenkel, V.M., 2005. Factors for the variability of discards: assumptions and field evidence. Canadian Journal of Fisheries and Aquatic Sciences 62: 224-235.

Sampson, D. B. and P. R. Crone. 1997. Commercial fisheries data collection procedures for US Pacific coast groundfish. NOAA Tech. Memo. NMFS-NWFSC-31, 189 p.

Stratoudakis, Y., Fryer, R.J., Cook, R.M., Pierce, G.J., 1999. Fish discarded from Scottish demersal vessels: Estimators of total discards and annual estimates for targeted gadoids. ICES Journal of Marine Science 56: 592-605.

Trumble, R. J., S. M. Kaimmer, and G. H. Williams. 2000. Estimation of discard mortality rates for Pacific halibut bycatch in groundfish longline fisheries. North American Journal of Fisheries Management 20: 931-939.

Wallace, J. R. 2000. Unpublished report. Pacific halibut discard in the EDCP Observer program. June 2000. 18 p.

Wallace, J. and J. Hastie. 2009. Pacific halibut bycatch in IPHC area 2A in the 2008 groundfish bottom trawl fishery. NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

Walmsley, S.A., Leslie, R.W., Saur, W.H.H., 2007. Bycatch and discarding in the South African demersal trawl fishery. Fisheries Research 86: 15-30.

Williams, G. H. 2008. Pacific halibut discard mortality rates in the 2006 open access and CDQ groundfish fisheries, and recommendations for discard mortality rates needed for monitoring halibut bycatch in 2008 CDQ fisheries. International Pacific Halibut Commission, Seattle, WA. 13 p.

Williams, G. H. and D. Chen. 2004. Pacific halibut discard mortality rates in the 1990-2002 Alaskan groundfish fisheries, with recommendations for monitoring in 2004. International Pacific Halibut Commission. Report of Assessment and Research Activities 2003: 227-244.

FIGURES

Figure 1. Fish ticket and logbook data processing for division into groundfish fishery sectors after retrieval of a full calendar year data set from the Pacific Fisheries Information Network (PacFIN) database. Grey highlight indicates sectors for which federal observer data is available.

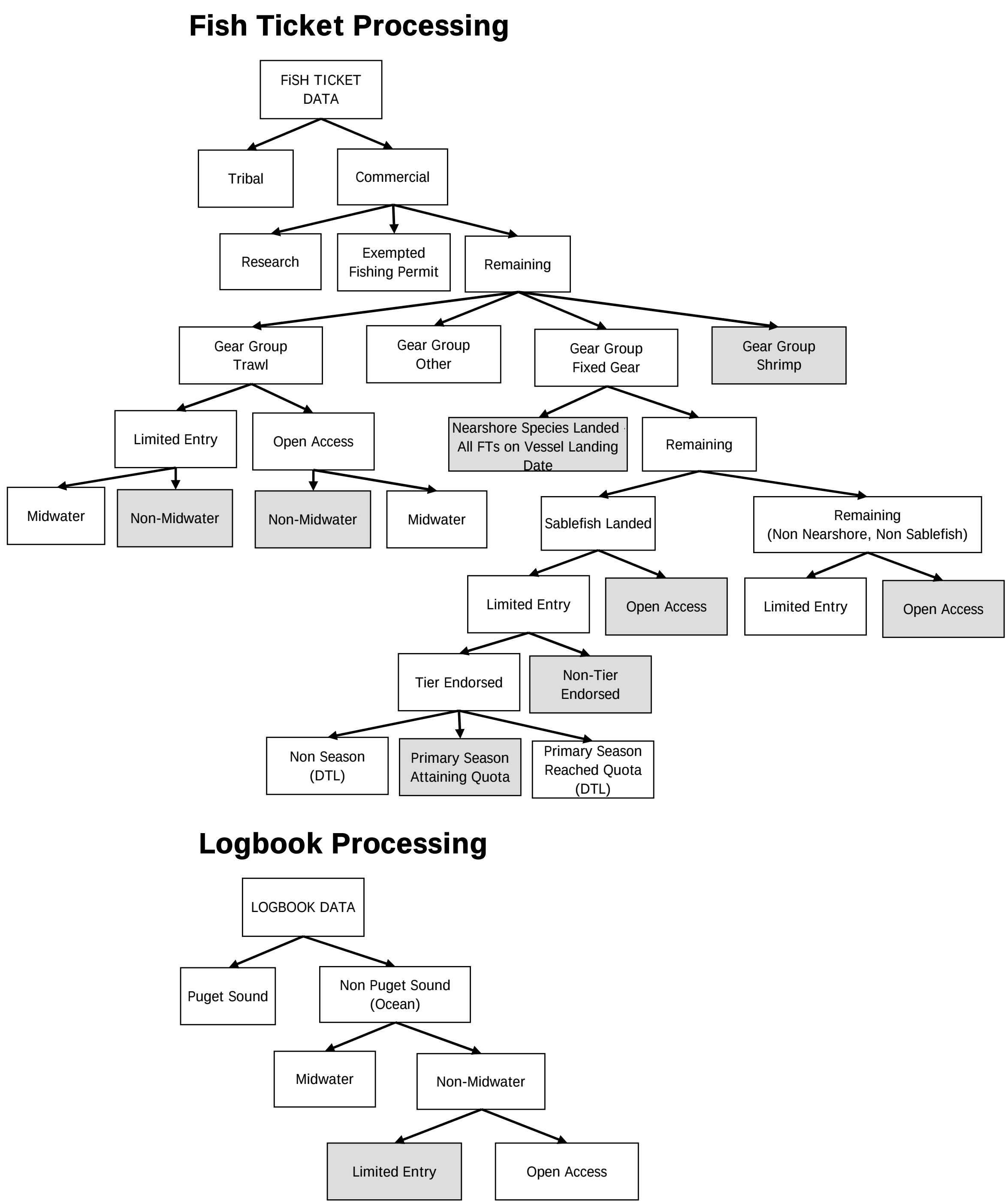


Figure 2a. Locations of observed and fleet logbook trawl tows north of Coos Bay, Oregon in 2009.

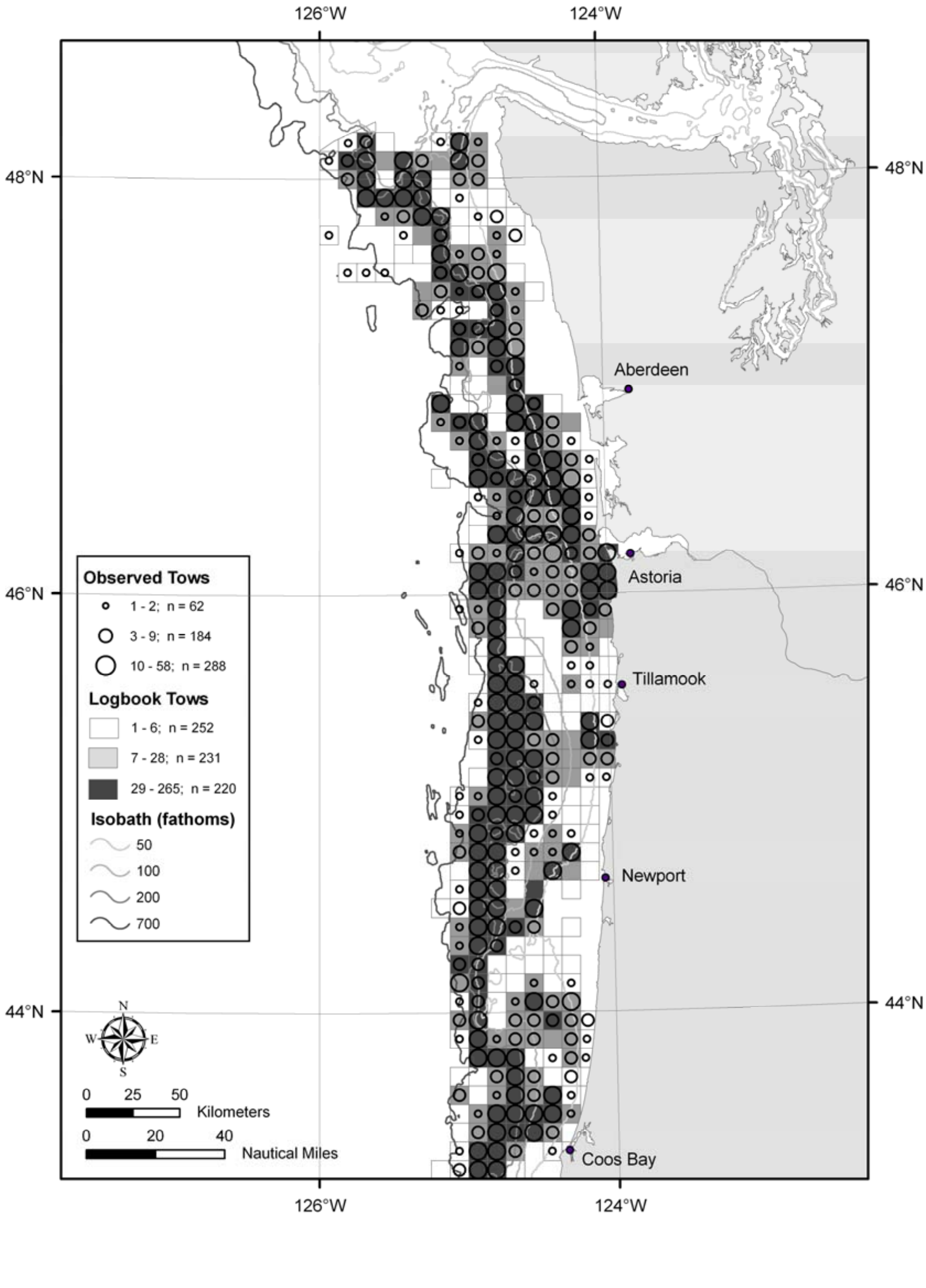


Figure 2b. Locations of observed and fleet logbook trawl tows south of Coos Bay, Oregon and north of San Francisco, California in 2009.

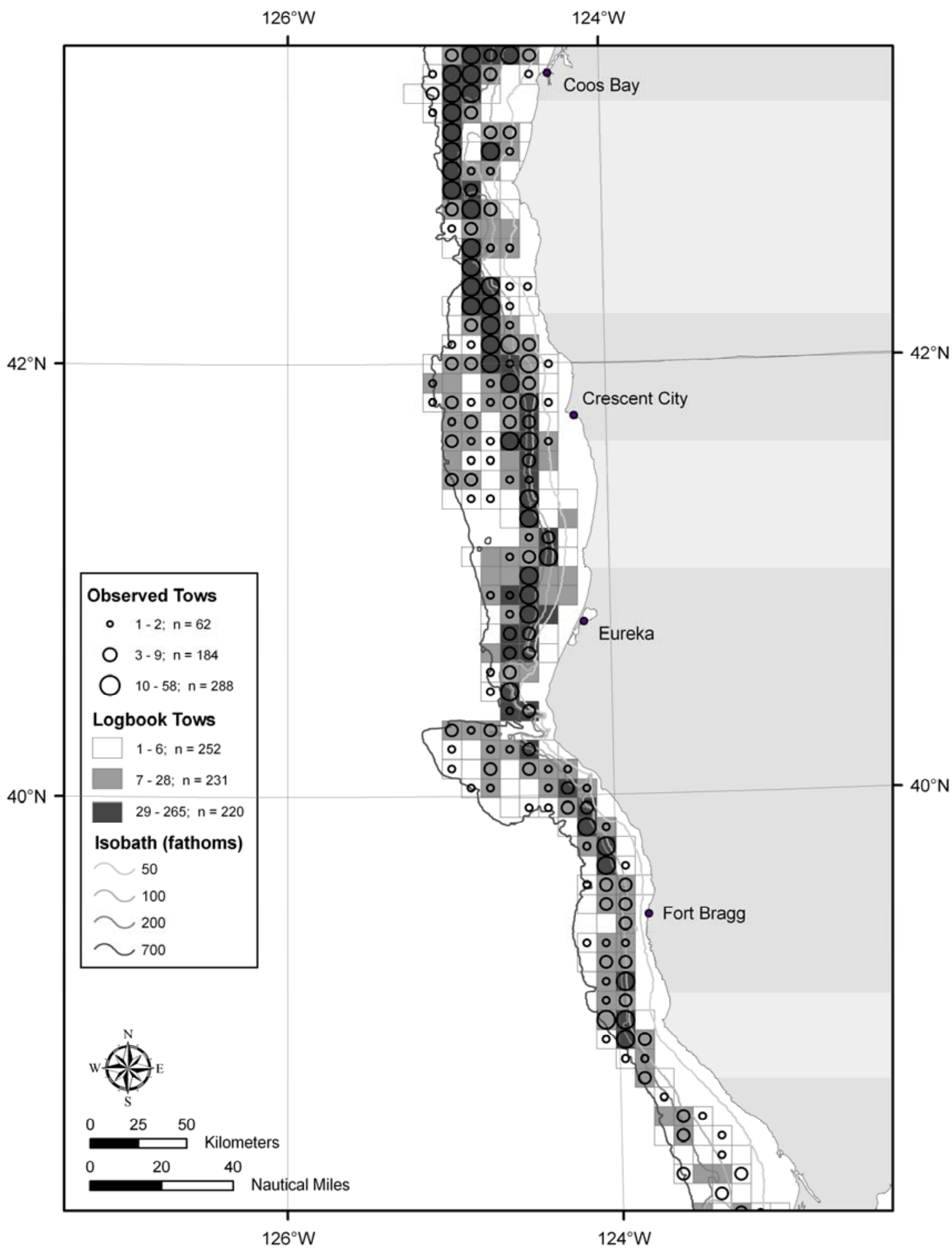


Figure 2c. Locations of observed and fleet logbook trawl tows south of San Francisco, California in 2009.

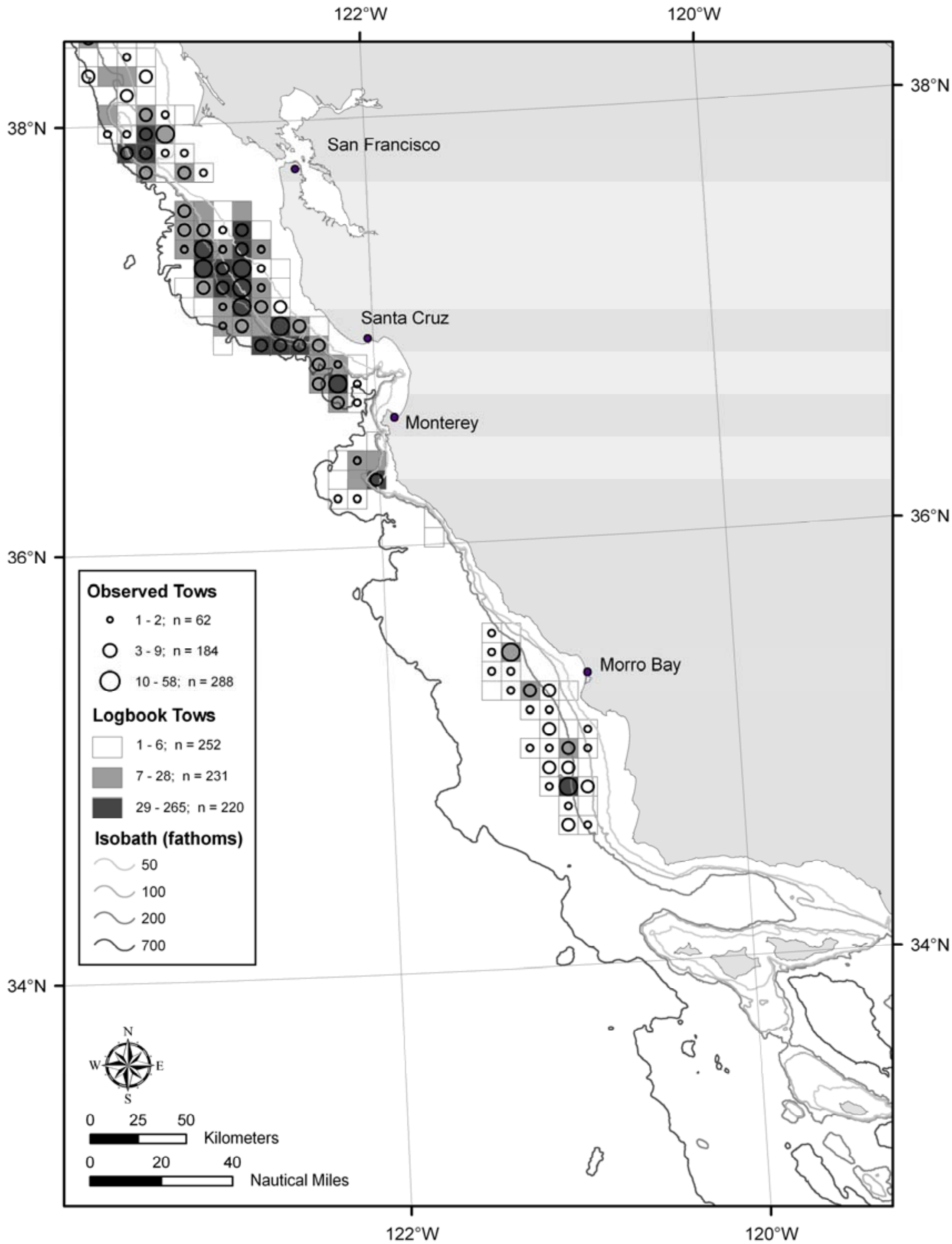
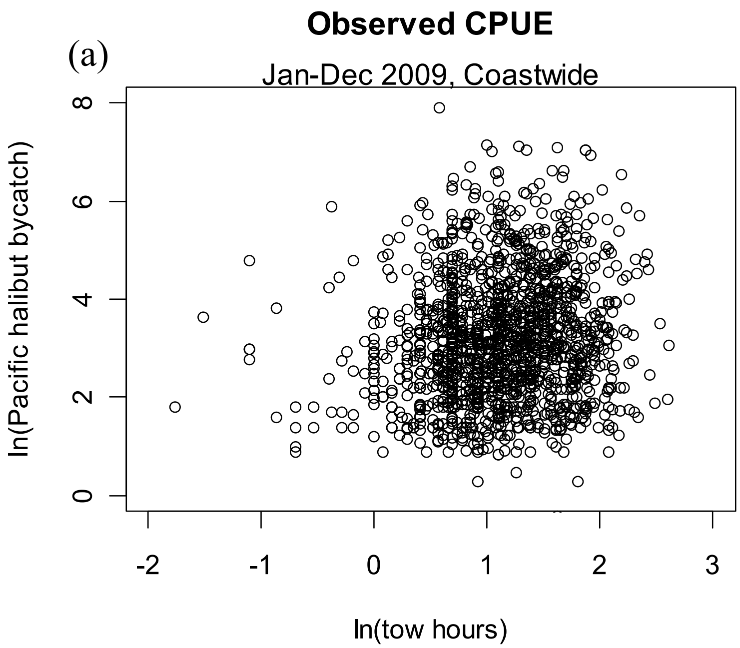


Figure 3. Log-transformed bycatch of Pacific halibut (kg) versus tow hours. A proportional relationship is not evident when including data from all areas and periods within the 2009 calendar year (a). When data from certain locations and months (b) are isolated, proportionality becomes more apparent.

(a)



(b)

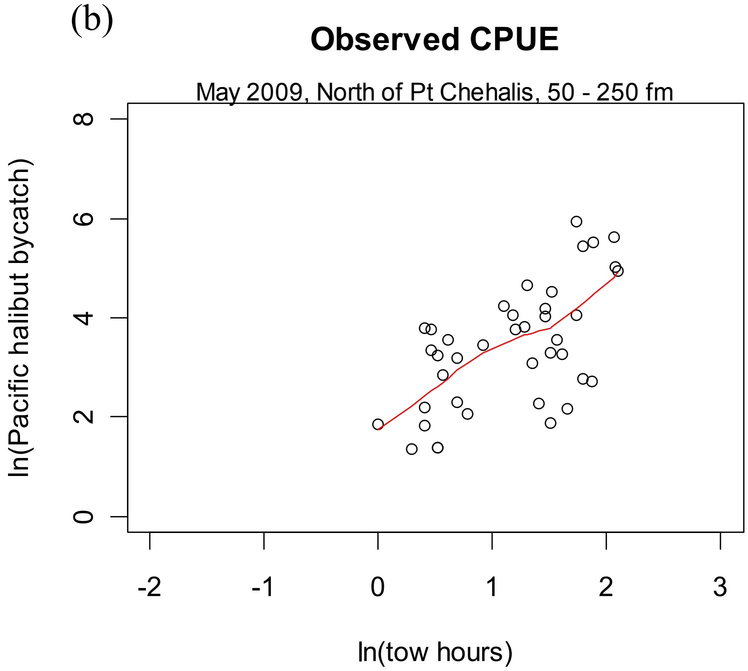


Figure 4. Tow duration (hours) versus average depth (fathoms), calculated from the depth recorded at the set and haul locations of a tow, from tows observed by the West Coast Groundfish Observer Program in the LE bottom trawl sector from 2002-2009.

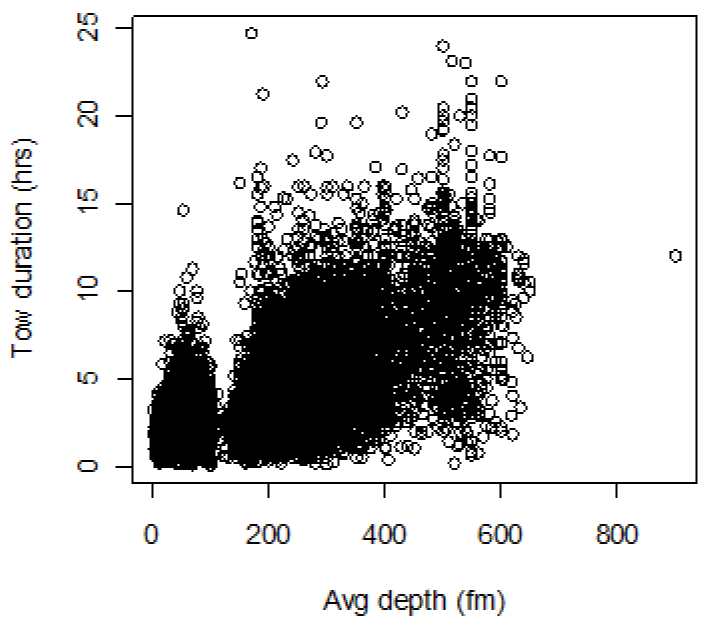


Figure 5. Expansion factors and WCGOP observed discard rate by gear type for the limited-entry (LE) and open-access (OA) non-nearshore fixed gear sectors used to expand discard estimates of Pacific halibut to the fleet-wide level.

Fishery		**Expansion Factor**	**Observed Discard Rate Applied**	
LE Sablefish Primary	Longline Pot	Retained Sablefish	LE Sablefish Primary	Longline Pot
LE Sablefish Non-Primary	Longline Pot	Retained Groundfish Retained Sablefish	LE Sablefish Non-Primary OA Fixed Gear *	Longline Pot
OA Fixed Gear	Hook-and-line Pot	Retained Sablefish	OA Fixed Gear *	Hook-and-line Pot

* No discard ratio or discard estimate was computed in the OA fixed gear sector for 2002-2006 because the WCGOP only covered OA vessels in California during this time.

Figure 6. Estimated discard mortality of Pacific halibut in the non-nearshore groundfish fixed gear fishery. Estimates are presented for fixed gear sectors with annual discard estimates exceeding 1 mt, which included all components of the limited entry (LE) sablefish primary sector (longline gear (LL) by area and pot gear (POT) coastwide) and the open access (OA) sector using hook-and-line gears. The OA fixed gear sector was only observed in California from 2003-2006 and was not covered in 2002. A fixed average discard rate from 2007 and 2008 data was applied to generate 2002-2006 discard estimates for the OA sector. Although OA 2002-2006 discard estimates are not included in final total mortality summaries, they are shown here for comparison purposes.

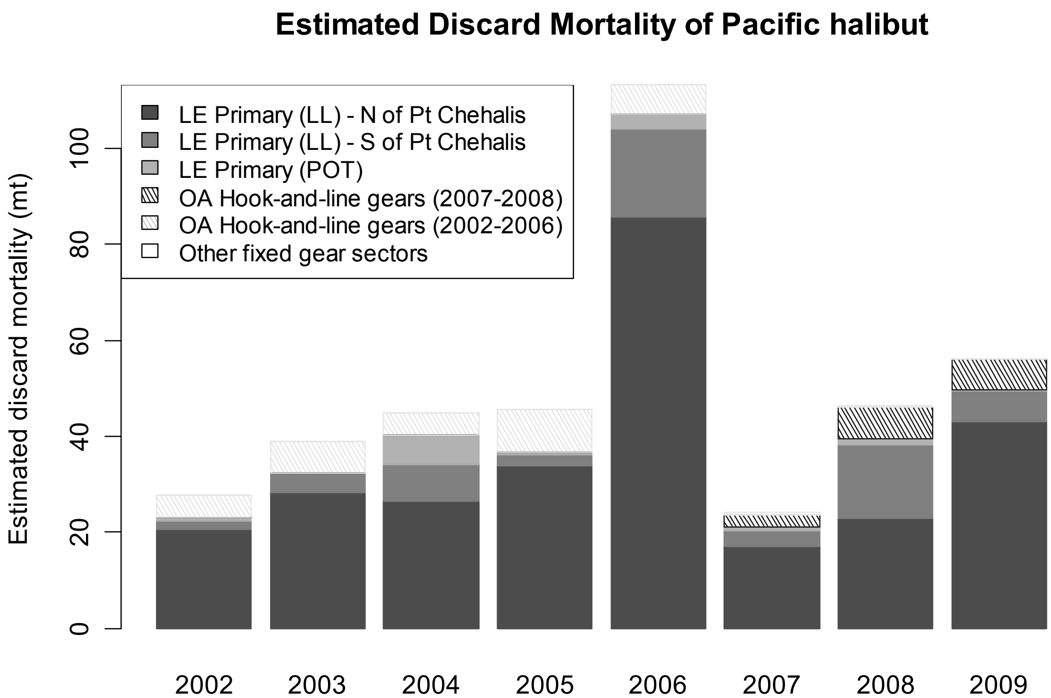
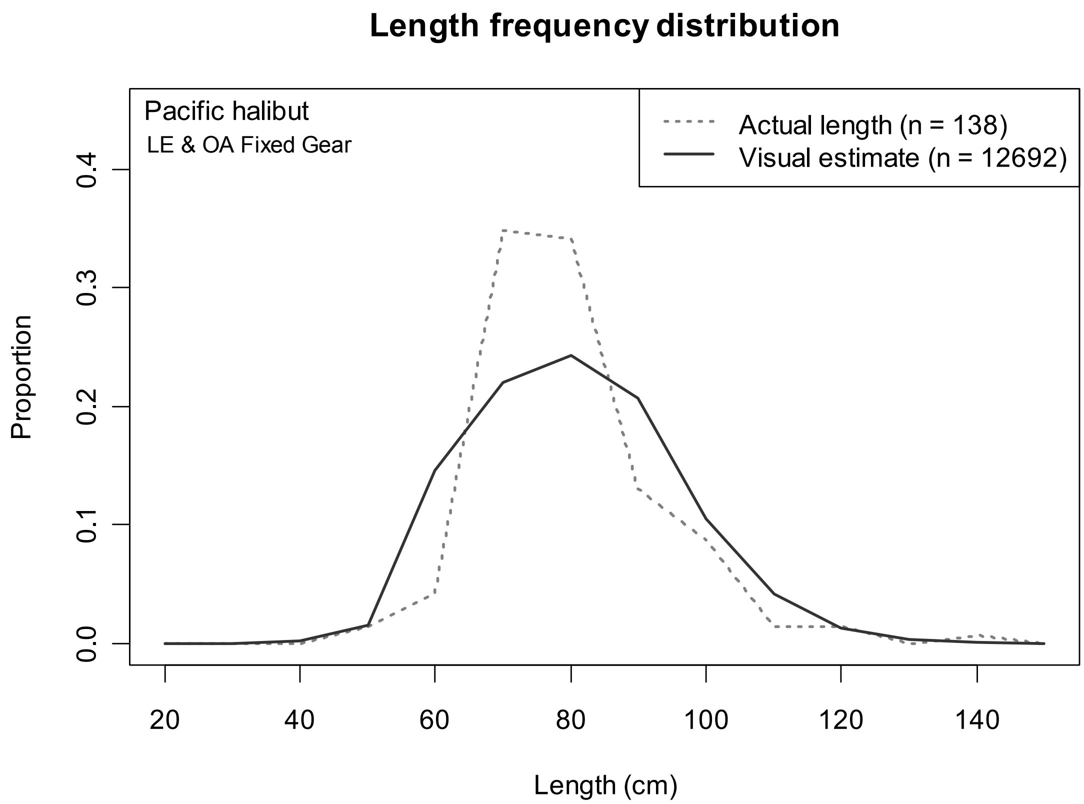


Figure 7. Length frequency distribution of discarded Pacific halibut on WCGOP observed limited entry (LE) and open access (OA) groundfish fixed gear vessels from September 2003 through December 2009. The majority of Pacific halibut lengths collected in this fishery were visual estimates (solid dark line). Actual length measurements (dashed gray line) were only available for 138 fish.



TABLES

Table 1. Observed trips, tows, vessels, Pacific halibut discard (kg), and tow hours in the LE bottom trawl sector. Data are provided for each year, area, and depth strata used in our analysis. Total fleet tow hours and the percentage of tow hours that were observed are presented on the far right, based on trawl logbook data from the PacFIN regional database. Note that Point Chehalis is located at 46° 53.30' N. lat.

	Num. of observed trips	Num. of observed tows	Num. of observed vessels	Observed Pacific halibut discard (kg)	Observed tow hours	Vessel logbook total tow hours*	% of tow hours observed
North of Pt Chehalis							
0 to 60 fm							
2002	102	341	15	5,818	592	2,934	20%
2003	20	80	7	412	199	1,527	13%
2004	98	307	13	6,969	604	3,539	17%
2005	62	234	16	5,380	451	2,559	18%
2006	73	197	14	4,400	411	3,044	14%
2007	26	114	6	3,261	254	1,965	13%
2008	12	124	3	2,320	373	1,345	28%
2009	19	138	10	4,931	271	967	28%
> 60 fm							
2002	110	443	25	41,165	1,623	13,766	12%
2003	59	299	23	11,188	1,318	10,521	13%
2004	94	397	21	22,851	1,256	5,862	21%
2005	134	778	31	64,433	2,157	9,465	23%
2006	96	417	21	36,897	1,330	7,177	19%
2007	42	281	15	14,872	1,223	7,446	16%
2008	54	459	24	35,271	2,328	10,962	21%
2009	68	526	25	42,739	2,475	11,055	22%
South of Pt Chehalis							
0 to 60 fm							
2002	110	609	34	4,226	1,208	8,394	14%
2003	91	279	25	575	566	6,615	9%
2004	125	812	28	3,286	1,536	7,417	21%
2005	132	622	35	8,141	1,603	8,590	19%
2006	118	678	28	12,902	1,640	9,568	17%
2007	72	406	21	8,934	1,131	7,678	15%
2008	61	321	15	1,798	726	4,278	17%
2009	88	616	21	11,412	1,511	5,152	29%
> 60 fm							
2002	378	1734	118	7,753	9,988	70,012	14%
2003	334	1625	104	8,293	9,388	58,480	16%
2004	390	1914	90	10,909	10,394	39,198	27%
2005	354	1808	89	24,016	8,297	39,770	21%
2006	330	1680	73	18,225	8,054	40,687	20%
2007	297	1707	81	18,017	8,758	46,857	19%
2008	376	2281	92	25,351	11,577	58,751	20%
2009	517	3098	95	32,303	15,285	67,873	23%

* Vessel logbook total tow hours have been adjusted based on the total fish ticket landings of

Table 2. Observed discard ratios (kg/hr) and estimated gross discard (kg) for Pacific halibut in each of the area, depth, and CPUE strata used in our analysis for the LE bottom trawl sector. "Correlating species" includes arrowtooth flounder, petrale sole, lingcod, Pacific cod, skates, yellowtail rockfish, and Pacific ocean perch. Confidence intervals were estimated based on uncertainty in observer data only.

	0 to 60 fathoms					> 60 fathoms				
	Observed		Estimated			Observed		Estimated		
	Discard ratio (kg/hr)	SE	Gross discard estimate (kg)	95% CI lower	95% CI upper	Discard ratio (kg/hr)	SE	Gross discard estimate (kg)	95% CI lower	95% CI upper
North of Pt Chehalis										
≤ 125 lbs/hr correlating species										
2002	6.85	0.99	6,261	4,483	8,040	5.62	0.89	32,795	22,586	43,004
2003	1.04	0.40	364	87	640	1.40	0.56	7,354	1,608	13,100
2004	6.49	1.61	5,235	2,682	7,788	1.34	0.29	3,457	1,979	4,935
2005	9.75	2.90	5,566	2,325	8,808	12.59	6.94	42,483	0	88,428
2006	7.84	1.64	9,254	5,453	13,054	5.16	1.06	17,259	10,327	24,190
2007	11.72	3.56	10,868	4,401	17,335	3.35	1.47	14,420	2,041	26,799
2008	2.35	0.66	953	428	1,478	1.18	0.20	8,139	5,432	10,846
2009	7.42	1.50	2,222	1,340	3,104	3.31	0.62	21,963	13,846	30,079
> 125 lbs/hr correlating species										
2002	10.88	1.05	21,973	17,808	26,138	46.28	5.97	367,146	274,388	459,904
2003	2.55	0.70	3,003	1,388	4,617	20.65	3.40	109,201	73,947	144,455
2004	12.54	1.55	34,254	25,944	42,564	32.46	4.75	106,598	76,023	137,173
2005	12.48	1.64	24,818	18,433	31,204	38.88	3.39	236,715	196,312	277,117
2006	12.34	1.49	23,006	17,566	28,447	45.08	6.66	172,672	122,674	222,669
2007	14.33	5.30	14,865	4,090	25,641	28.03	6.33	88,142	49,137	127,147
2008	7.92	1.52	7,428	4,628	10,229	35.53	5.33	145,011	102,366	187,656
2009	22.15	3.94	14,796	9,634	19,958	38.71	4.42	171,175	132,907	209,443
South of Pt Chehalis										
≤ 125 lbs/hr correlating species										
2002	3.91	0.77	22,477	13,751	31,203	0.44	0.08	26,125	17,061	35,190
2003	0.32	0.16	1,378	14	2,741	0.20	0.04	9,287	6,016	12,558
2004	1.10	0.20	4,205	2,743	5,668	0.28	0.04	8,411	5,942	10,881
2005	2.78	0.39	8,645	6,240	11,049	0.35	0.06	9,438	6,333	12,543
2006	1.34	0.22	5,333	3,641	7,024	0.27	0.04	7,483	5,384	9,583
2007	3.70	0.72	14,082	8,728	19,436	0.47	0.06	15,392	11,234	19,550
2008	1.21	0.27	2,318	1,303	3,334	0.92	0.20	39,272	22,436	56,108
2009	2.63	0.32	7,680	5,828	9,532	0.84	0.11	46,433	34,095	58,770
> 125 lbs/hr correlating species										
2002	2.95	0.39	7,799	5,770	9,828	4.00	0.52	39,837	29,604	50,070
2003	1.91	0.51	4,477	2,122	6,833	4.59	0.48	51,592	41,072	62,112
2004	3.28	0.54	11,841	8,005	15,678	4.16	0.51	38,425	29,266	47,584
2005	6.18	0.74	33,875	25,937	41,814	7.58	0.78	98,808	78,787	118,829
2006	13.50	1.97	75,235	53,665	96,804	6.13	0.70	80,668	62,579	98,756
2007	11.77	1.37	45,573	35,200	55,947	6.56	0.60	91,034	74,717	107,350
2008	3.83	0.63	9,030	6,120	11,941	5.80	0.78	93,055	68,584	117,526
2009	11.83	1.34	26,412	20,557	32,267	7.43	0.89	94,555	72,439	116,672

Table 3. Summary of Pacific halibut viability data collected by observers in each year and depth stratum in the LE bottom trawl sector. The condition of sampled Pacific halibut was identified as Excellent (Exc), Poor, or Dead based on the injury key presented in Appendix L of the WCGOP training manual (NWFSC 2006b), which is consistent with IPHC protocol. The number in each category was weighted based on the length weight relationship as described in the Methods.

	Number				**Weighted average percentages in each category**		
	Exc	Poor	Dead	Total	Exc	Poor	Dead
2004							
0 to 60 fm	397	208	229	834	52%	25%	23%
> 60 fm	168	181	641	990	20%	20%	60%
2005							
0 to 60 fm	267	208	405	880	35%	21%	44%
> 60 fm	777	808	1647	3232	27%	23%	50%
2006							
0 to 60 fm	424	189	333	946	54%	18%	28%
> 60 fm	237	157	609	1003	23%	15%	62%
2007							
0 to 60 fm	251	89	444	784	38%	12%	50%
> 60 fm	154	125	862	1141	15%	11%	74%
2008							
0 to 60 fm	32	61	179	272	12%	22%	65%
> 60 fm	490	343	1433	2266	24%	16%	60%
2009							
0 to 60 fm	446	221	367	1034	44%	20%	36%
> 60 fm	594	394	1635	2623	25%	15%	60%
All years *(us*							
0 to 60 fm	1817	976	1957	4750	43%	20%	37%
> 60 fm	2420	2008	6827	11255	24%	17%	59%

Table 4. Gross discard (kg), and discard mortality (kg) of Pacific halibut estimated for each depth stratum and year in the LE bottom trawl sector. Estimates were allocated to the three condition categories based on information presented in Table 3.

	Estimated Gross Discard (kg)				**Estimated Discard Mortality (kg)**				
	Exc	Poor	Dead	Total	*m(Exc)*	*m(Poor)*	*m(Dead)*	*m(Total)*	DMR
0 to 60 fm									
2002	25,270	11,727	21,513	58,510	5,054	6,450	19,362	30,866	53%
2003	3,982	1,848	3,390	9,221	796	1,017	3,051	4,864	53%
2004	29,022	13,904	12,609	55,535	5,804	7,647	11,348	24,800	45%
2005	25,230	15,585	32,090	72,905	5,046	8,572	28,881	42,499	58%
2006	60,767	20,850	31,210	112,827	12,153	11,467	28,089	51,710	46%
2007	32,090	10,211	43,087	85,388	6,418	5,616	38,778	50,812	60%
2008	2,383	4,434	12,913	19,730	477	2,439	11,621	14,537	74%
2009	22,334	10,463	18,313	51,110	4,467	5,755	16,482	26,704	52%
> 60 fm									
2002	109,897	81,222	274,785	465,903	21,979	44,672	247,306	313,958	67%
2003	41,853	30,932	104,648	177,434	8,371	17,013	94,184	119,567	67%
2004	31,665	30,616	94,610	156,891	6,333	16,839	85,149	108,321	69%
2005	104,172	90,731	192,541	387,443	20,834	49,902	173,286	244,023	63%
2006	64,401	41,243	172,437	278,081	12,880	22,684	155,194	190,757	69%
2007	31,333	23,298	154,355	208,987	6,267	12,814	138,920	158,000	76%
2008	67,929	46,002	171,546	285,476	13,586	25,301	154,391	193,278	68%
2009	84,101	49,849	200,175	334,126	16,820	27,417	180,158	224,395	67%

Table 5. Total fleet-wide trawl effort (hours), estimated Pacific halibut bycatch (mt), estimated Pacific halibut discard mortality (mt), and mortality (kg) per tow hour in the LE bottom trawl sector from 2002 to 2009.

	Trawl effort (hours)	**Total bycatch (mt)**			**Total discard mortality (mt)**			**Mortality (kg) per tow hour**	**Estimated legal-sized halibut mortality (mt)**
		Estimate	95% confidence interval		Estimate	95% confidence interval			
			lower	*upper*		*lower*	*upper*		
2002	95,106	524	385	663	345	254	436	3.6	206
2003	77,143	187	126	247	124	85	164	1.6	76
2004	56,016	212	153	272	133	96	170	2.4	88
2005	60,384	460	334	590	287	208	367	4.7	150
2006	60,476	391	281	501	242	175	310	4.0	132
2007	63,946	294	190	399	209	135	283	3.3	117
2008	75,336	305	211	399	208	144	272	2.8	125
2009	85,047	385	291	480	251	190	313	3.0	157

Table 6. Pacific halibut bycatch (lb, net), mortality (lb, net), and mortality (lb) per trawl hour in the LE bottom trawl sector resulting from various stratification alternatives. We produced estimates using three different stratification schemes for observer and logbook data, which are detailed in the far left column. Two alternative stratification approaches were also considered when analyzing viability data, as noted in the second column. The first set of values provided, with 2 depths, 2 areas, 2 CPUE strata, and depth only as a means for stratifying viability data, coincide with our final estimates in Table 5. Values are provided in net lbs in order to provide easy comparison to estimates from Wallace and Hastie (2009). Note that 1 kg (round weight) = 1.65375 lbs (net weight).

Stratification of observer and logbook data	Stratification of viability data	Year	Trawl effort (hrs)	Bycatch (lb, net) est	Bycatch (lb, net) Lower bound	Bycatch (lb, net) Upper bound	Mortality (lb, net) est	Mortality (lb, net) Lower bound	Mortality (lb, net) Upper bound	Mortality (lb) per trawl hour
2 depths (60 fm) 2 areas (Pt Chehalis) 2 CPUE strata (125lbs/hr) *	depth only	2002	95,106	867,249	637,439	1,097,059	570,252	419,432	721,072	6.0
		2003	77,143	308,680	208,791	408,570	205,778	139,824	271,733	2.7
		2004	56,016	351,300	252,336	450,265	220,149	158,339	281,959	3.9
		2005	60,384	761,300	552,957	975,369	473,835	344,163	607,112	7.8
		2006	60,476	646,465	465,181	827,749	400,981	288,861	513,100	6.6
		2007	63,946	486,823	313,463	660,183	345,324	223,035	467,613	5.4
		2008	75,336	504,735	349,431	660,039	343,673	237,810	449,537	4.6
		2009	85,047	637,084	480,657	793,512	415,254	313,591	516,918	4.9
	depth & area	2002	95,106	867,249	637,439	1,097,059	571,112	420,151	722,074	6.0
		2003	77,143	308,680	208,791	408,570	205,908	139,906	271,909	2.7
		2004	56,016	351,300	252,336	450,265	207,435	149,351	265,518	3.7
		2005	60,384	761,300	552,957	975,369	463,083	337,007	592,586	7.7
		2006	60,476	646,465	465,181	827,749	408,952	294,308	523,596	6.8
		2007	63,946	486,823	313,463	660,183	339,387	221,892	456,882	5.3
		2008	75,336	504,735	349,431	660,039	347,423	240,515	454,332	4.6
		2009	85,047	637,084	480,657	793,512	427,362	322,256	532,467	5.0
2 depths (60 fm) 2 areas (Pt Chehalis)	depth only	2002	95,106	763,502	585,336	941,668	500,414	383,388	617,439	5.3
		2003	77,143	249,458	179,631	319,285	165,710	119,787	211,633	2.1
		2004	56,016	338,115	251,974	424,255	210,584	156,462	264,706	3.8
		2005	60,384	780,600	616,744	944,456	485,891	383,925	587,856	8.0
		2006	60,476	659,735	493,013	826,457	411,964	307,785	516,144	6.8
		2007	63,946	451,157	325,528	576,786	318,223	229,605	406,841	5.0
		2008	75,336	518,820	381,150	656,490	353,132	259,363	446,902	4.7
		2009	85,047	646,293	514,508	778,078	420,111	334,846	505,376	4.9
	depth & area	2002	95,106	763,502	585,336	941,668	501,246	384,093	618,399	5.3
		2003	77,143	249,458	179,631	319,285	165,792	119,840	211,743	2.1
		2004	56,016	338,115	251,974	424,255	198,048	147,533	248,562	3.5
		2005	60,384	780,600	616,744	944,456	475,219	375,699	574,739	7.9
		2006	60,476	659,735	493,013	826,457	420,065	313,218	526,911	6.9
		2007	63,946	451,157	325,528	576,786	312,506	227,098	397,914	4.9
		2008	75,336	518,820	381,150	656,490	357,648	262,342	452,953	4.7
		2009	85,047	646,293	514,508	778,078	431,344	342,980	519,709	5.1
2 depths (60 fm) by state (WA, OR, CA)	depth only	2002	95,106	800,798	582,613	1,018,983	526,039	382,525	669,554	5.5
		2003	77,143	229,817	149,752	309,881	152,157	99,825	204,489	2.0
		2004	56,016	257,856	188,863	326,850	160,222	117,631	202,812	2.9
		2005	60,384	819,617	628,552	1,010,682	510,200	391,366	629,034	8.4
		2006	60,476	627,591	457,072	798,109	391,228	285,046	497,410	6.5
		2007	63,946	443,613	306,848	580,378	313,756	216,075	411,438	4.9
		2008	75,336	578,736	406,997	751,516	393,419	276,574	511,032	5.2
		2009	85,047	605,068	463,631	746,506	389,973	299,734	480,212	4.6

Table 7. Pacific halibut length frequencies collected by WCGOP observers during 2009 in the LE bottom trawl sector. The upper limits on the length intervals are inclusive, while the lower limits are not.

Length interval (cm)	Length freq.	Percent length freq.
25-30	0	0.00
30-35	0	0.00
35-40	0	0.00
40-45	0	0.00
45-50	0	0.00
50-55	1	0.00
55-60	18	0.01
60-65	104	0.07
65-70	242	0.16
70-75	321	0.21
75-80	294	0.19
80-85	194	0.13
85-90	149	0.10
90-95	90	0.06
95-100	51	0.03
100-105	34	0.02
105-110	12	0.01
110-115	8	0.01
115-120	3	0.00
120-125	3	0.00
125-130	2	0.00
130-135	0	0.00
135-140	0	0.00
140-145	0	0.00
145-150	0	0.00
150-155	0	0.00
155-160	0	0.00
160-165	0	0.00
165-170	0	0.00
170-175	0	0.00
175-180	0	0.00
180-185	0	0.00

Table 8. Number of observed trips, sets, and vessels in the limited-entry (LE) sablefish primary, LE sablefish non-primary, and open-access (OA) fixed gear sectors annually by the West Coast Groundfish Observer Program.

	LE Sablefish Primary			LE Sablefish Non-Primary	OA Fixed Gear	
	Longline					
	North of Pt Chehalis	South of Pt Chehalis	Pot	Longline	Hook-and-line Gears	Pot
Number of observed trips						
2002	23	47	23	11	0	0
2003	25	25	35	130	41	16
2004	13	35	13	62	43	96
2005	31	73	39	35	34	43
2006	31	34	39	121	11	38
2007	36	40	30	158	50	45
2008	17	60	24	122	58	55
2009	13	34	27	138	68	30
Number of observed sets						
2002	207	181	247	22	0	0
2003	191	158	362	219	49	50
2004	115	205	139	130	53	182
2005	388	275	491	60	37	50
2006	291	159	288	196	12	39
2007	381	136	154	303	66	72
2008	194	345	329	220	68	74
2009	178	109	67	271	101	45
Number of observed vessels						
2002	9	18	6	4	0	0
2003	8	8	6	17	13	7
2004	6	13	3	14	15	17
2005	10	18	7	11	10	14
2006	9	10	7	21	8	15
2007	9	14	4	36	25	20
2008	6	13	6	32	33	20
2009	4	6	3	34	33	18

Table 9. Total sablefish and FMP groundfish landings (except Pacific hake) (mt) and observed Pacific halibut discard ratios for each sector and gear type in the non-nearshore fixed gear fishery. Sablefish landings were used as the discard ratio denominator and expansion factor in all cases except for the limited-entry (LE) sablefish non-primary sector, where target species include a variety of deepwater groundfish species.

	LE Sablefish Primary			LE Sablefish Non-Primary		OA Fixed Gear	
	Longline		Pot	Longline	Pot	Hook-and-Line Gears	Pot
	North of Pt Chehalis	South of Pt Chehalis					
Expansion factor							
Total fleet landings *(Based on fish tickets)*	*Sablefish landings (mt)*			*Groundfish landings (mt)*	*Sablefish landings (mt)*	*Sablefish landings (mt)*	
2002	390	407	354	452	6	266	109
2003	499	569	604	485	7	375	187
2004	698	654	626	377	6	272	182
2005	641	676	615	519	7	518	374
2006	684	708	611	441	4	347	435
2007	489	607	426	462	9	203	244
2008	385	663	421	652	18	326	235
2009	418	984	487	695	18	580	358
Observed Pacific halibut discard ratios							
2002	0.3297	0.0283	0.0114	0.0000	*	*	*
2003	0.3532	0.0467	0.0005	0.0003	*	*	*
2004	0.2369	0.0746	0.0526	0.0000	*	*	*
2005	0.3318	0.0204	0.0043	0.0000	*	*	*
2006	0.7827	0.1636	0.0271	0.0000	*	*	*
2007	0.2184	0.0334	0.0092	0.0032	(0.0035)	0.0839	0.0035
2008	0.3715	0.1453	0.0151	0.0041	(0.0010)	0.1259	0.0010
2009	0.6436	0.0413	0.0017	0.0003	(0.0007)	0.0684	0.0007

* No discard ratio is provided for the OA fixed gear sector for 2002-2006 because the WCGOP only covered OA vessels in California during this time. Since 2007-2008 OA pot discard rates were used to estimate LE non-endorsed discard, discard ratios for this sector were also excluded.

Table 10. Summary of the percent of observed trips that caught Pacific halibut by sector, gear, and area (where applicable). Observed average, minimum and maximum annual catch and annual discard weights of Pacific halibut are also provided, along with the percent of Pacific halibut catch weight that was discarded by year.

	LE Sablefish Primary			LE Sablefish Non-Primary		OA Fixed Gear	
	Longline		Pot	Longline	Pot	Hook-and-Line Gears	Pot
	North of Pt Chehalis	South of Pt Chehalis					
% of observed trips that caught Pacific halibut							
2002	95.7%	46.8%	17.4%	0.0%	--	--	--
2003	100.0%	52.0%	8.6%	0.8%	--	0.0%	0.0%
2004	100.0%	71.4%	38.5%	0.0%	--	0.0%	0.0%
2005	96.8%	58.9%	33.3%	0.0%	--	0.0%	0.0%
2006	100.0%	76.5%	56.4%	0.0%	--	9.1%	0.0%
2007	94.4%	47.5%	33.3%	1.9%	--	26.0%	6.7%
2008	100.0%	78.3%	83.3%	3.3%	--	34.5%	5.5%
2009	84.6%	35.3%	33.3%	0.7%	--	38.2%	10.0%
Observed annual catch (mt) of Pacific halibut							
Mean	51.5	11.6	2.1	0.1	--	0.9	0.0
Min	12.1	2.3	0.1	0.0	--	0.1	0.0
Max	117.2	36.6	5.4	0.1	--	1.6	0.0
Observed annual discard (mt) of Pacific halibut							
Mean	45.0	11.5	2.1	0.1	--	0.9	0.0
Min	9.5	2.3	0.1	0.0	--	0.1	0.0
Max	109.6	36.6	5.4	0.1	--	1.6	0.0
% of Pacific halibut catch that was discarded							
2002	80.1%	95.5%	100.0%	*	--	--	--
2003	82.5%	99.5%	100.0%	100.0%	--	*	*
2004	79.0%	97.7%	100.0%	*	--	*	*
2005	84.8%	100.0%	100.0%	*	--	*	*
2006	93.5%	97.9%	100.0%	*	--	100.0%	*
2007	80.6%	100.0%	100.0%	100.0%	--	100.0%	100.0%
2008	87.4%	100.0%	100.0%	100.0%	--	100.0%	100.0%
2009	100.0%	100.0%	100.0%	100.0%	--	100.0%	100.0%

* No catch of Pacific halibut was observed, and thus a % discarded calculation is not possible.
-- No WCGOP observations were made for the year/sector/gear type.

Table 11. Estimated gross discard (mt) and discard mortality (mt) of Pacific halibut in the limited entry (LE) sablefish primary, LE sablefish non-primary, and open access (OA) fixed gear sectors. Estimated discard mortality was computed by applying a 16% discard mortality rate to gross discard estimates for hook-and-line gears. An 18% discard mortality rate was applied to pot gear estimates. Discard estimates were not initially computed for the 2002-2006 OA fixed gear sector because the WCGOP only observed OA fixed gear vessels off of California during that time. In a previous report (Heery and Bellman 2009), potential values for these years were produced by applying a combined discard rate from 2007-2008 to 2002-2006 landings data. The results using this assumed 2007-2008 rate are shown in brackets.

	2002	2003	2004	2005	2006	2007	2008	2009
LE Sablefish Primary (mt)								
Longline								
North of Pt Chehalis								
Gross discard estimate	128.7	176.2	165.3	212.6	535.5	106.8	143.2	268.8
Estimated discard mortality (16%)	20.6	28.2	26.5	34.0	85.7	17.1	22.9	43.0
South of Pt Chehalis								
Gross discard estimate	11.5	26.6	48.7	13.8	115.9	20.3	96.3	40.7
Estimated discard mortality (16%)	1.8	4.3	7.8	2.2	18.5	3.2	15.4	6.5
Coastwide								
Gross discard estimate	140.2	202.7	214.1	226.4	651.4	127.1	239.5	309.4
Estimated discard mortality (16%)	22.4	32.4	34.3	36.2	104.2	20.3	38.3	49.5
Pot								
Coastwide								
Gross discard estimate	4.1	0.3	33.0	2.6	16.5	3.9	6.4	0.8
Estimated discard mortality (18%)	0.7	0.1	5.9	0.5	3.0	0.7	1.1	0.2
LE Sablefish Non-Primary (mt)								
Longline								
Coastwide								
Gross discard estimate	0.0	0.1	0.0	0.0	0.0	1.5	2.6	0.2
Estimated discard mortality (16%)	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0
Pot								
Coastwide								
Gross discard estimate	*	*	*	*	*	0.03	0.02	0.01
*Assuming OA fixed gear 07-08 pot discard rate for 2002 - 2006 **	[0.0]	[0.0	[0.0]	[0.0]	[0.0]			
Estimated discard mortality (18%)	*	*	*	*	*	0.0	0.0	0.0
OA Fixed Gear (mt)								
Hook-and-line Gears								
Coastwide								
Gross discard estimate						17.0	41.1	39.7
Assuming 07-08 discard rate for 2002 - 2006	[28.7]	[40.3]	[29.3]	[55.8]	[37.4]			
Estimated discard mortality (16%)						2.7	6.6	6.4
Pot								
Coastwide								
Gross discard estimate						0.8	0.2	0.3
Assuming 07-08 discard rate for 2002 - 2006	[0.2]	[0.4]	[0.4]	[0.8]	[0.9]			
Estimated discard mortality (18%)						0.2	0.0	0.0

* The LE sablefish non-primary pot sector has not been observed by the WCGOP and therefore estimates are based on discard rates from observed OA fixed gear pot vessels. Because the OA fixed gear pot sector was only observed on a coastwide basis in 2007 and 2008, estimates for LE sablefish non-primary pot are only available in these years as well.

Table 12. Estimated total discard mortality (mt) of Pacific halibut from each sector of the non-nearshore fixed gear groundfish fishery from 2002 through 2009.

	Estimated discard mortality (mt)			
	LE Sablefish Primary	LE Sablefish Non-Primary	OA Fixed Gear	All Sectors
2002	23.1	0.0	0.0	23.1
2003	32.5	0.0	0.0	32.5
2004	39.5	0.0	0.0	39.5
2005	36.6	0.0	0.0	36.6
2006	106.9	0.0	0.0	106.9
2007	21.0	0.2	2.9	24.1
2008	39.3	0.4	6.6	46.4
2009	49.7	0.0	6.4	56.1

Table 13. Pacific halibut length frequencies collected by WCGOP observers in the LE sablefish primary fixed gear sector from 2002-2009. Two tables are presented: (a) length frequency based on actual length measurements, and (b) length frequency based on visually estimated lengths. Visual estimates are approximated by essentially rounding to the nearest 10 cm.

(a) Actual length measurements

Length interval (cm)	Length freq.	Percent length freq.
25-30	0	0.00
30-35	0	0.00
35-40	0	0.00
40-45	0	0.00
45-50	0	0.00
50-55	2	0.01
55-60	3	0.02
60-65	8	0.06
65-70	16	0.12
70-75	34	0.25
75-80	29	0.21
80-85	14	0.10
85-90	9	0.07
90-95	9	0.07
95-100	6	0.04
100-105	3	0.02
105-110	0	0.00
110-115	2	0.01
115-120	0	0.00
120-125	2	0.01
125-130	0	0.00
130-135	0	0.00
135-140	1	0.01
140-145	0	0.00
145-150	0	0.00
150-155	0	0.00
155-160	0	0.00
160-165	0	0.00
165-170	0	0.00
170-175	0	0.00
175-180	0	0.00
180-185	0	0.00

(b) Visual length estimates

Approximate length	**Number**	**Proportion**
20 cm	0	0.00
30 cm	5	0.00
40 cm	29	0.00
50 cm	191	0.02
60 cm	1849	0.15
70 cm	2799	0.22
80 cm	3090	0.24
90 cm	2635	0.21
100 cm	1339	0.11
110 cm	528	0.04
120 cm	174	0.01
130 cm	43	0.00
140 cm	10	0.00
150 cm	0	0.00
160 cm	0	0.00
170 cm	0	0.00
180 cm	0	0.00

Table 14. Pacific halibut length data collected in the LE sablefish primary sector by the WCGOP approximating legal (≥ 80 cm) versus sublegal (< 80 cm) definitions by the IPHC. Both actual length measurements and visual length estimates are presented.

	Pacific halibut lengths	
	Number	Percentage
Actual length		
< 80 cm	88	63.8%
≥ 80 cm	50	36.2%
Visual estimate		
0 - 74 cm	4873	38.4%
75 - 84 cm	3090	24.3%
85 - 150 cm	4729	37.3%

Table 15. Coverage information, bycatch ratios, and bycatch estimates for Pacific halibut in the nearshore fixed gear groundfish sectors. The WCGOP began observing the California nearshore sector in 2003 and the Oregon nearshore sector in 2004. Bycatch estimates in this table are not intended to represent mortality values, as rates of discard mortality for this sector are not available.

	Observed								Estimated		
	Fleet observer coverage rate *	Number of observed sets	% of sets with Pacific halibut	Pacific halibut bycatch (kg)	Nearshore species retained (kg)	Pacific halibut bycatch rate	SE	Total fleet catch of nearshore species (mt)	Pacific halibut bycatch (mt)	Lower bound (mt)	Upper bound (mt)
Nearshore fixed gear groundfish fishery sector											
Oregon											
2002	*not observed*		-	-	-	-	-	279	-	-	-
2003	*not observed*		-	-	-	-	-	208	-	-	-
2004	4.9%	207	1.9%	48.9	10,210	0.0048	0.0027	210	1.005	0.002	2.123
2005	6.3%	167	0.6%	32.5	11,419	0.0028	0.0028	180	0.513	0.002	1.520
2006	11.6%	379	1.3%	62.8	19,396	0.0032	0.0016	168	0.543	0.005	1.081
2007	8.9%	242	0.4%	7.8	16,103	0.0005	0.0005	180	0.087	0.002	0.257
2008	7.6%	183	0.5%	27.2	14,285	0.0019	0.0019	189	0.360	0.002	1.066
2009	6.2%	219	2.3%	80.1	13,852	0.0058	0.0028	224	1.298	0.060	2.536
California											
2002	*not observed*		-	-	-	-	-	380	-	-	-
2003	3.2%	205	0.0%	0.0	8,085	0.0000	0.0000	255	0.000	0.000	0.000
2004	8.0%	422	0.0%	0.0	23,126	0.0000	0.0000	288	0.000	0.000	0.000
2005	4.7%	217	0.9%	79.5	13,108	0.0061	0.0054	280	1.695	0.003	4.665
2006	3.2%	158	0.0%	0.0	8,367	0.0000	0.0000	258	0.000	0.000	0.000
2007	4.5%	224	0.0%	0.0	12,138	0.0000	0.0000	271	0.000	0.000	0.000
2008	2.2%	87	0.0%	0.0	6,543	0.0000	0.0000	293	0.000	0.000	0.000
2009	2.6%	122	0.0%	0.0	6,723	0.0000	0.0000	260	0.000	0.000	0.000

* Coverage rate in the nearshore sector is defined as the proportion of nearshore target species landings that were observed. Nearshore target species are listed in Appendix C.

Table 16. Coverage information, bycatch ratios, and bycatch estimates for Pacific halibut in the pink shrimp trawl fishery. The WCGOP began observing the pink shrimp fishery in 2004, but was not able to observe the fishery 2006. Bycatch estimates in this table are not intended to represent mortality values, as rates of discard mortality for this fishery are not available.

	Observed								Estimated		
	Fleet observer coverage rate *	Number of observed tows	% of tows with Pacific halibut	Pacific halibut bycatch (kg)	Pink shrimp retained (kg)	Pacific halibut bycatch rate	SE	Total fleet catch of pink shrimp (mt)	Pacific halibut bycatch (mt)	Lower bound (mt)	Upper bound (mt)
Pink shrimp trawl fishery											
2002	*not observed*		-	-	-	-	-	25,375	-	-	-
2003	*not observed*		-	-	-	-	-	13,887	-	-	-
2004	6.5%	1026	0.0%	0.0	583,266	0.000000	0.000000	8,974	0.000	0.000	0.000
2005	3.9%	509	0.2%	2.3	424,683	0.000005	0.000005	10,862	0.058	0.109	0.172
2006	*not observed*		-	-	-	-	-	8,400	-	-	-
2007	6.2%	951	0.2%	15.3	672,663	0.000023	0.000019	10,935	0.248	0.109	0.649
2008	5.2%	840	0.0%	0.0	805,763	0.000000	0.000000	15,375	0.000	0.000	0.000
2009	6.0%	695	0.0%	0.0	866,905	0.000000	0.000000	14,412	0.000	0.000	0.000

* Coverage rate in the pink shrimp trawl fishery is defined as the proportion of pink shrimp landings that were observed.

Table 17. Coverage information, bycatch ratios, and bycatch estimates for Pacific halibut in the California halibut trawl fishery. This fishery is comprised of two components: a limited entry sector that operates primarily off of San Francisco, and an open access fishery that operates further south. Bycatch estimates in this table are not intended to represent mortality values, as rates of discard mortality for this fishery are not available.

	Observed								Estimated		
	Fleet observer coverage rate *	Number of observed tows	% of tows with Pacific halibut	Pacific halibut bycatch (kg)	California halibut retained (kg)	Pacific halibut bycatch rate	SE	Total fleet catch of California halibut (mt)	Pacific halibut bycatch (mt)	Lower bound (mt)	Upper bound (mt)
California halibut trawl fishery											
Limited Entry Sector											
2002	3.2%	52	0.0%	0.0	3,590	0.0000	0.0000	112	0.000	0.000	0.000
2003	17.0%	206	0.0%	0.0	19,104	0.0000	0.0000	112	0.000	0.000	0.000
2004	16.7%	141	0.7%	3.5	23,447	0.0001	0.0001	140	0.021	0.001	0.062
2005	14.1%	221	0.5%	4.7	27,342	0.0002	0.0002	194	0.033	0.002	0.099
2006	11.7%	224	0.9%	2.9	14,286	0.0002	0.0002	123	0.025	0.001	0.063
2007	12.8%	80	1.3%	8.1	5,419	0.0015	0.0015	42	0.063	0.000	0.188
2008	24.6%	118	8.5%	82.6	9,637	0.0086	0.0030	39	0.336	0.108	0.563
2009	6.0%	29	0.0%	0.0	2,898	0.0000	0.0000	48	0.000	0.000	0.000
Open Access Sector											
2002	*not observed*		-	-	-	-	-	90	-	-	-
2003	4.3%	110	0.0%	0.0	1,977	0.0000	0.0000	46	0.000	0.000	0.000
2004	6.4%	244	1.6%	49.4	5,100	0.0097	0.0058	80	0.776	0.001	1.691
2005	9.7%	360	0.0%	0.0	7,489	0.0000	0.0000	77	0.000	0.000	0.000
2006	*not observed*		-	-	-	-	-	61	-	-	-
2007	6.9%	226	0.0%	0.0	2,694	0.0000	0.0000	39	0.000	0.000	0.000
2008	5.2%	197	0.0%	0.0	2,631	0.0000	0.0000	50	0.000	0.000	0.000
2009	0.7%	30	0.0%	0.0	634	0.0000	0.0000	85	0.000	0.000	0.000

* Coverage rate in the California halibut trawl fishery is defined as the proportion of California halibut landings that were observed.

Table 18. Bycatch estimates for all fishery sectors observed by the West Coast Groundfish Observer Program (WCGOP) from 2002 through 2009. Total morality estimates are also provided in cases when discard mortality rates were available.

	LE bottom trawl	Non-nearshore fixed gear			Nearshore fixed gear	Pink shrimp	CA halibut	Total
		LE primary	LE non-primary	OA				
Gross discard estimates (mt)								
2002	524	144	0.0	-	-	-	0.0	669
2003	187	203	0.1	-	0.0	-	0.0	390
2004	212	247	0.0	-	1.0	0.0	0.8	461
2005	460	229	0.0	-	2.2	0.1	0.0	692
2006	391	668	0.0	-	0.5	-	0.0	1059
2007	294	131	1.5	17.9	0.1	0.2	0.1	445
2008	305	246	2.7	41.3	0.4	0.0	0.3	596
2009	385	310	0.2	40.0	1.3	0.0	0.0	737
Total discard mortality (mt)								
2002	345	23	0.0	0.0	*no discard mortality rate available*			
2003	124	32	0.0	0.0		""		157
2004	133	40	0.0	0.0		""		173
2005	287	37	0.0	0.0		""		323
2006	242	107	0.0	0.0		""		350
2007	209	21	0.2	2.9		""		233
2008	208	39	0.4	6.6		""		254
2009	251	50	0.0	6.4		""		307

" - " Indicates years of incomplete or no observer coverage for which estimates are not available

APPENDIX A

Common and scientific names of species included in the Pacific Coast Groundfish Fishery Management Plan, as amended through Amendment 19 (PFMC 2008).

SHARKS
Big skate, *Raja binoculata*
California skate, *R. inornata*
Leopard shark, *Triakis semifasciata*
Longnose skate, *R. rhina*
Soupfin shark, *Galeorhinus zyopterus*
Spiny dogfish, *Squalus acanthias*

RATFISH
Ratfish, *Hydrolagus colliei*

MORIDS
Finescale codling, *Antimora microlepis*

GRENADIERS
Pacific rattail, *Coryphaenoides acrolepis*

ROUNDFISH
Cabezon, *Scorpaenichthys marmoratus*
Kelp greenling, *Hexagrammos decagrammus*
Lingcod, *Ophiodon elongatus*
Pacific cod, *Gadus macrocephalus*
Pacific whiting, (hake) *Merluccius productus*
Sablefish, *Anoplopoma fimbria*

FLATFISH
Arrowtooth flounder, (turbot) *Atheresthes stomias*
Butter sole, *Isopsetta isolepis*
Curlfin sole, *Pleuronichthys decurrens*
Dover sole, *Microstomus pacificus*
English sole, *Parophrys vetulus*
Flathead sole, *Hippoglossoides elassodon*
Pacific sanddab, *Citharichthys sordidus*
Petrale sole, *Eopsetta jordani*
Rex sole, *Glyptocephalus zachirus*
Rock sole, *Lepidopsetta bilineata*
Sand sole, *Psettichthys melanostictus*
Starry flounder, *Platichthys stellatus*

ROCKFISH
Includes all genera and species of the family Scopaenidae, even if not listed, that occur in the Washington, Oregon, and California area. The Scopaenidae genera are *Sebastes*, *Scorpaena*, *Sebastolobus*, and *Scorpaenodes*.

Aurora, *Sebastes. aurora*
Bank, *S. rufus*
Black, *S. melanops*
Black-and-yellow, *S. chrysolmelas.*
Blackgill, *S. melanostomus*
Blue, *S. mystinus*
Bocaccio, *S. paucispinis*
Bronzespotted, *S. gilli*
Brown, *S. auriculatus*
Calico, *S. dalli*
California scorpionfish, *Scorpaena guttata*
Canary, *Sebastes pinniger*
Chameleon, *S. phillipsi*
Chilipepper, *S. goodei*
China, *S. nebulosus*
Copper, *S. caurinus*
Cowcod, *S. levis*
Darkblotched, *S. crameri*
Dusky, *S. ciliatus*
Dwarf-red, *S. rufianus*
Flag, *S. rubrivinctus*
Freckled, *S. lentiginosus*
Gopher, *S. carnatus*
Grass, *S. rastrelliger*
Greenblotched, *S. rosenblatti*
Greenspotted, *S. chlorostictus*
Greenstriped, *S. elongatus*
Halfbanded, *S. semicinctus*
Harlequin, *S. variegatus*
Honeycomb, *S. umbrosus*
Kelp, *S. atrovirens*
Longspine thornyhead, *Sebastolobus altivelis*
Mexican, *Sebastes. macdonaldi*
Olive, *S. serranoides*
Pink, *S. eos*
Pinkrose, *S. simulator*
Pygmy, *S. wilsoni*
Pacific ocean perch, *S. alutus*
Quillback, *S. maliger*
Redbanded, *S. babcocki*
Redstripe, *S. proriger*
Rosethorn, *S. helvomaculatus*
Rosy, *S. rosaceus*
Rougheye, *S. aleutianus*
Sharpchin, *S. zacentrus*
Shortbelly, *S. jordani*

Shortraker, *S. borealis*
Shortspine thornyhead, *Sebastolobus alascanus*
Silvergray, *Sebastes. brevispinus*
Speckled, *S. ovalis*
Splitnose rockfish, *S. diploproa*
Squarespot, *S. hopkinsi*
Starry, *S. constellatus*
Stripetail, *S. saxicola*
Swordspine, *S. ensifer*
Tiger, *S. nigorcinctus*
Treefish, *S. serriceps*
Vermilion, *S. miniatus*
Widow, *S. entomelas*
Yelloweye, *S. ruberrimus*
Yellowmouth, *S. reedi*
Yellowtail, *S. flavidus*

APPENDIX B

Weighted catch composition data from the limited entry bottom trawl fishery. The frequency within each length bin were weighted based on the following equation:

$$n_{wghtd_l} = n_l \times \frac{W_{st}}{\sum_l w_{stl}} \times \frac{\sum_t W_{st}}{W_{st}} \times \frac{\hat{W}_s}{\sum_t W_{st}} = n_l \times \frac{\hat{W}_s}{\sum_l w_{stl}}$$

where:
n_l: number of measured fish in length bin l
w_{stl}: total weight of length l fish measured, as determined through the IPHC length-weight relationship
W_{st}: total observed discard weight of Pacific halibut on tow t, in stratum s
$\hat{W}_s$: estimated total discard weight of Pacific halibut in stratum s

Table 1. Weighted length frequency distributions for Pacific halibut in the limited entry bottom trawl fishery for 2004 through 2009.

	Weighted length frequency distribution					
Length bin (cm)	2004	2005	2006	2007	2008	2009
22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
24	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
26	0.0000	0.0125	0.0000	0.0000	0.0000	0.0000
28	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
30	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
32	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
34	0.0000	0.0000	0.0000	0.0000	0.0001	0.0000
36	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
38	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
40	0.0048	0.0000	0.0000	0.0000	0.0000	0.0000
42	0.0000	0.0044	0.0000	0.0000	0.0000	0.0000
44	0.0025	0.0012	0.0057	0.0000	0.0000	0.0010
46	0.0037	0.0000	0.0094	0.0000	0.0000	0.0009
48	0.0000	0.0034	0.0046	0.0000	0.0000	0.0000
50	0.0027	0.0068	0.0092	0.0000	0.0007	0.0010
52	0.0021	0.0069	0.0080	0.0041	0.0001	0.0053
54	0.0156	0.0076	0.0164	0.0042	0.0025	0.0004
56	0.0138	0.0211	0.0242	0.0071	0.0022	0.0019
58	0.0187	0.0331	0.0322	0.0293	0.0027	0.0091
60	0.0400	0.0431	0.0670	0.0593	0.0169	0.0175
62	0.0329	0.0719	0.0751	0.0638	0.0285	0.0275
64	0.0428	0.0783	0.1001	0.0932	0.0614	0.0545
66	0.0532	0.0807	0.0979	0.1150	0.0705	0.0606
68	0.0757	0.0845	0.0870	0.0000	0.0599	0.0835
70	0.0672	0.0851	0.0986	0.1022	0.0871	0.0971
72	0.0774	0.0882	0.0478	0.1029	0.0973	0.0972
74	0.0998	0.0746	0.0588	0.0840	0.1023	0.0941
76	0.0890	0.0538	0.0461	0.0710	0.0743	0.0697
78	0.0658	0.0506	0.0423	0.0539	0.0688	0.0744
80	0.0586	0.0427	0.0372	0.0460	0.0599	0.0527
82	0.0486	0.0320	0.0258	0.0325	0.0443	0.0434
84	0.0337	0.0255	0.0186	0.0316	0.0428	0.0335
86	0.0221	0.0166	0.0130	0.0000	0.0300	0.0290
88	0.0235	0.0115	0.0120	0.0154	0.0263	0.0290
90	0.0193	0.0127	0.0115	0.0168	0.0225	0.0263
92	0.0157	0.0092	0.0101	0.0122	0.0179	0.0204
94	0.0169	0.0108	0.0099	0.0148	0.0164	0.0151
96	0.0062	0.0052	0.0066	0.0089	0.0143	0.0087
98	0.0034	0.0058	0.0066	0.0091	0.0110	0.0103
100	0.0089	0.0045	0.0025	0.0053	0.0080	0.0088
102	0.0060	0.0034	0.0029	0.0036	0.0061	0.0069
104	0.0065	0.0023	0.0027	0.0041	0.0083	0.0062
106	0.0043	0.0029	0.0032	0.0031	0.0059	0.0028
108	0.0016	0.0014	0.0019	0.0018	0.0027	0.0025
110	0.0048	0.0015	0.0004	0.0017	0.0018	0.0021
112	0.0015	0.0007	0.0020	0.0010	0.0016	0.0024
114	0.0020	0.0010	0.0007	0.0007	0.0020	0.0017
116	0.0026	0.0006	0.0002	0.0000	0.0010	0.0005
118	0.0007	0.0004	0.0003	0.0002	0.0004	0.0002
120	0.0013	0.0005	0.0002	0.0002	0.0005	0.0003
122	0.0008	0.0003	0.0000	0.0004	0.0003	0.0003
124	0.0010	0.0002	0.0001	0.0000	0.0003	0.0002
126	0.0000	0.0001	0.0002	0.0001	0.0001	0.0002
128	0.0002	0.0000	0.0002	0.0000	0.0000	0.0002
130	0.0003	0.0002	0.0001	0.0002	0.0000	0.0002
132	0.0005	0.0001	0.0001	0.0000	0.0000	0.0000
134	0.0006	0.0000	0.0001	0.0000	0.0001	0.0001
136	0.0001	0.0001	0.0002	0.0000	0.0000	0.0001
138	0.0000	0.0001	0.0000	0.0000	0.0000	0.0001
140	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001
142	0.0000	0.0000	0.0000	0.0000	0.0001	0.0001
144	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
146	0.0001	0.0000	0.0000	0.0000	0.0000	0.0001
148	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
150	0.0001	0.0000	0.0001	0.0000	0.0000	0.0000
152	0.0002	0.0000	0.0000	0.0000	0.0000	0.0000
154	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000
156	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
158	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
160	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
162	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
164	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 2. Percentage of weighted length measurements in each condition category.

Length	2004			2005			2006		
bin (cm)	Exc	Poor	Dead	Exc	Poor	Dead	Exc	Poor	Dead
22	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
26	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
28	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
32	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
34	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
36	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
38	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
40	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
42	0.0%	0.0%	0.0%	0.0%	88.4%	11.6%	0.0%	0.0%	0.0%
44	0.0%	0.0%	100.0%	0.0%	70.8%	29.2%	0.0%	0.0%	100.0%
46	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
48	0.0%	0.0%	0.0%	22.4%	0.0%	77.6%	0.0%	0.0%	100.0%
50	0.0%	0.0%	100.0%	61.1%	9.9%	29.0%	0.0%	0.0%	100.0%
52	100.0%	0.0%	0.0%	23.6%	31.3%	45.2%	0.0%	0.0%	100.0%
54	75.5%	11.9%	12.6%	10.0%	20.8%	69.2%	16.9%	0.0%	83.1%
56	12.6%	37.9%	49.5%	25.1%	12.7%	62.2%	22.0%	15.2%	62.8%
58	21.4%	25.6%	53.0%	15.1%	29.5%	55.4%	4.1%	20.2%	75.7%
60	58.6%	14.4%	27.0%	18.2%	21.0%	60.8%	12.9%	25.5%	61.6%
62	40.0%	21.6%	38.4%	18.5%	23.7%	57.8%	27.3%	22.3%	50.4%
64	33.4%	18.4%	48.2%	25.2%	28.4%	46.4%	31.5%	21.0%	47.5%
66	23.9%	24.7%	51.4%	20.9%	26.7%	52.3%	29.6%	17.3%	53.0%
68	38.2%	21.9%	39.9%	17.0%	27.5%	55.5%	35.5%	18.8%	45.7%
70	29.5%	18.9%	51.6%	20.1%	30.3%	49.5%	30.2%	16.6%	53.2%
72	22.9%	17.9%	59.2%	20.3%	27.1%	52.6%	37.2%	21.1%	41.8%
74	23.8%	25.5%	50.7%	24.5%	23.4%	52.1%	39.6%	13.9%	46.5%
76	24.0%	23.2%	52.8%	26.8%	29.1%	44.1%	31.2%	19.2%	49.6%
78	18.8%	18.4%	62.9%	18.1%	23.5%	58.4%	35.0%	21.2%	43.8%
80	19.1%	19.6%	61.3%	23.1%	27.9%	49.0%	34.3%	15.4%	50.2%
82	14.4%	26.1%	59.5%	30.4%	25.1%	44.6%	31.7%	27.8%	40.5%
84	21.7%	9.5%	68.9%	27.0%	18.9%	54.0%	30.1%	13.2%	56.7%
86	32.4%	24.0%	43.6%	35.5%	24.7%	39.8%	31.3%	15.0%	53.7%
88	27.8%	14.8%	57.5%	31.2%	27.8%	41.0%	22.9%	12.4%	64.7%
90	30.2%	34.6%	35.2%	28.0%	16.6%	55.4%	23.8%	18.7%	57.5%
92	40.2%	28.1%	31.7%	42.5%	21.7%	35.9%	43.7%	10.7%	45.6%
94	26.1%	33.3%	40.6%	33.4%	16.3%	50.3%	35.3%	7.1%	57.6%
96	19.9%	30.0%	50.1%	34.6%	19.2%	46.2%	16.5%	13.9%	69.6%
98	33.8%	28.4%	37.8%	32.3%	22.8%	44.9%	16.8%	13.0%	70.2%
100	14.6%	26.9%	58.5%	28.1%	17.4%	54.5%	48.5%	9.6%	41.9%
102	16.0%	49.3%	34.7%	43.1%	6.9%	50.0%	13.7%	0.0%	86.3%
104	19.0%	47.5%	33.5%	36.4%	16.2%	47.4%	49.6%	6.4%	44.0%
106	23.6%	22.6%	53.9%	58.4%	11.9%	29.7%	10.4%	22.8%	66.8%
108	27.6%	3.0%	69.4%	28.6%	22.6%	48.8%	42.2%	15.1%	42.6%
110	25.4%	12.6%	62.0%	22.7%	28.1%	49.2%	32.0%	3.1%	64.9%
112	95.8%	1.2%	3.0%	16.2%	0.0%	83.8%	7.2%	14.1%	78.7%
114	0.0%	26.2%	73.8%	24.4%	4.9%	70.7%	38.9%	0.0%	61.1%
116	58.7%	6.9%	34.4%	69.4%	0.0%	30.6%	77.8%	0.0%	22.2%
118	2.7%	7.5%	89.9%	44.9%	35.0%	20.1%	33.8%	31.5%	34.7%
120	5.7%	26.2%	68.0%	9.5%	28.7%	61.8%	0.0%	0.0%	100.0%
122	40.8%	40.3%	18.9%	1.5%	15.2%	83.4%	50.0%	50.0%	0.0%
124	70.3%	14.8%	14.8%	79.9%	0.0%	20.1%	15.6%	0.0%	84.4%
126	0.0%	100.0%	0.0%	89.0%	11.0%	0.0%	47.1%	0.0%	52.9%
128	82.0%	9.0%	9.0%	18.7%	0.0%	81.3%	89.8%	0.0%	10.2%
130	13.5%	0.0%	86.5%	4.9%	47.6%	47.6%	0.0%	0.0%	100.0%
132	100.0%	0.0%	0.0%	20.2%	63.3%	16.5%	0.0%	100.0%	0.0%
134	80.0%	0.0%	20.0%	100.0%	0.0%	0.0%	22.2%	0.0%	77.8%
136	0.0%	0.0%	100.0%	10.5%	16.1%	73.4%	0.0%	0.0%	100.0%
138	0.0%	0.0%	0.0%	15.2%	0.0%	84.8%	0.0%	0.0%	0.0%
140	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%
142	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
144	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
146	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
148	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
150	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
152	100.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%
154	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
156	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
158	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
160	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
162	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
164	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Length	2007			2008			2009		
bin (cm)	Exc	Poor	Dead	Exc	Poor	Dead	Exc	Poor	Dead
22	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
24	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
26	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
28	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
30	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
32	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
34	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%
36	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
38	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
40	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
42	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
44	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
46	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
48	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
50	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	100.0%	0.0%	0.0%
52	33.4%	0.0%	66.6%	100.0%	0.0%	0.0%	99.5%	0.5%	0.0%
54	35.6%	0.0%	64.4%	0.0%	4.4%	95.6%	42.3%	57.7%	0.0%
56	33.9%	0.0%	66.1%	0.0%	0.0%	100.0%	15.7%	65.3%	19.0%
58	9.4%	6.8%	83.8%	3.3%	3.3%	93.3%	51.0%	4.4%	44.6%
60	5.3%	7.4%	87.2%	9.0%	14.3%	76.8%	28.7%	21.9%	49.4%
62	20.8%	9.5%	69.7%	6.1%	15.7%	78.2%	19.3%	19.5%	61.2%
64	18.9%	5.3%	75.8%	17.3%	7.5%	75.2%	38.0%	9.4%	52.6%
66	9.1%	12.5%	78.4%	25.8%	8.9%	65.4%	26.7%	19.7%	53.6%
68	54.5%	45.5%	0.0%	17.4%	13.2%	69.4%	30.1%	17.5%	52.4%
70	16.0%	7.6%	76.4%	13.1%	14.0%	73.0%	27.4%	17.5%	55.1%
72	14.8%	9.1%	76.0%	19.1%	13.7%	67.2%	22.9%	18.3%	58.8%
74	17.6%	16.9%	65.5%	24.8%	13.8%	61.3%	27.7%	14.8%	57.5%
76	14.0%	9.9%	76.1%	21.9%	11.5%	66.6%	26.2%	16.6%	57.2%
78	15.5%	13.4%	71.2%	24.7%	10.4%	64.9%	18.5%	12.1%	69.4%
80	14.7%	11.6%	73.6%	21.2%	11.4%	67.4%	20.5%	14.1%	65.3%
82	14.6%	3.0%	82.4%	21.5%	16.1%	62.4%	16.3%	18.5%	65.2%
84	17.9%	7.0%	75.1%	15.9%	22.8%	61.3%	17.0%	12.0%	71.0%
86	56.6%	43.4%	0.0%	17.6%	22.5%	59.8%	18.6%	15.5%	65.9%
88	12.3%	10.5%	77.1%	18.1%	18.8%	63.1%	20.1%	17.2%	62.8%
90	6.3%	3.7%	90.0%	23.9%	17.1%	59.0%	18.6%	13.6%	67.8%
92	20.7%	8.4%	70.9%	20.9%	25.1%	54.0%	25.3%	11.8%	62.9%
94	17.0%	18.4%	64.6%	18.8%	13.3%	67.9%	15.2%	18.4%	66.4%
96	16.7%	3.6%	79.7%	15.4%	21.3%	63.4%	27.6%	19.6%	52.8%
98	10.4%	8.2%	81.4%	28.4%	29.4%	42.3%	20.2%	16.9%	62.9%
100	15.4%	23.2%	61.4%	15.0%	19.4%	65.6%	13.4%	25.5%	61.1%
102	40.3%	9.2%	50.6%	27.6%	28.4%	44.1%	24.8%	23.8%	51.4%
104	16.7%	15.8%	67.5%	36.6%	11.7%	51.7%	28.0%	8.4%	63.7%
106	30.7%	20.1%	49.2%	34.8%	7.7%	57.6%	24.0%	13.5%	62.5%
108	29.0%	2.3%	68.7%	19.4%	14.2%	66.4%	18.2%	27.7%	54.1%
110	11.7%	45.1%	43.2%	40.2%	8.0%	51.9%	29.6%	10.4%	60.0%
112	26.9%	23.3%	49.8%	25.1%	9.2%	65.7%	14.7%	17.4%	67.9%
114	20.1%	0.0%	79.9%	22.4%	22.7%	54.9%	31.2%	7.4%	61.5%
116	0.0%	0.0%	100.0%	41.6%	4.8%	53.6%	79.5%	0.5%	20.0%
118	0.0%	0.0%	100.0%	25.5%	38.6%	35.9%	40.9%	4.4%	54.6%
120	85.1%	0.0%	14.9%	65.5%	34.5%	0.0%	48.0%	0.7%	51.2%
122	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	34.7%	0.0%	65.3%
124	0.0%	0.0%	0.0%	0.0%	70.9%	29.1%	26.1%	37.0%	37.0%
126	49.4%	0.0%	50.6%	0.0%	0.0%	100.0%	59.2%	40.8%	0.0%
128	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	55.7%	1.0%	43.3%
130	13.8%	0.0%	86.2%	0.0%	0.0%	0.0%	35.0%	65.0%	0.0%
132	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	100.0%
134	0.0%	0.0%	0.0%	94.7%	0.0%	5.3%	100.0%	0.0%	0.0%
136	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%
138	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
140	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
142	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	100.0%	0.0%	0.0%
144	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
146	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
148	0.0%	0.0%	100.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
150	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
152	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
154	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
156	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
158	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
160	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
162	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
164	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

APPENDIX C

Species indentification codes used in the Pacific Fisheries Information Network (PacFIN) database and assigned to WCGOP observer data, with aggregated species groups used in this report for the non-nearshore sectors of the groundfish fishery.

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
ALBC	ALBACORE	Other nongroundfish	Other nongroundfish	
AKSK	ALASKA SKATE	Other non-FMP skate	Other non-FMP skate	
AMCK	ATKA MACKEREL	Other nongroundfish	Other nongroundfish	
APLC	ALASKA PLAICE	Other non-FMP flatfish	Other non-FMP flatfish	
ARR1	NOM. AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	yes
ARRA	AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	yes
ART1	NOM. ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	yes
ARTH	ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	yes
ASKT	ALEUTIAN SKATE	Other non-FMP skate	Other non-FMP skate	
ASRK	PACIFIC ANGEL SHARK	Other nongroundfish	Other nongroundfish	
BABL	BLACK ABALONE	Other nongroundfish	Other nongroundfish	
BANK	BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	yes
BCAC	BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	yes
BCC1	NOM. BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	yes
BCLM	BUTTER CLAM	Other nongroundfish	Other nongroundfish	
BGL1	NOM. BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	yes
BHAG	BLACK HAGFISH	Other nongroundfish	Other nongroundfish	
BISC	BROWN IRISH LORD	Other nongroundfish	Other nongroundfish	
BKCR	BLUE KING CRAB	Other nongroundfish	Other nongroundfish	
BLCK	BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLGL	BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	yes
BLK1	NOM. BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLPT	BLACK EELPOUT	Other nongroundfish	Other nongroundfish	
BLSK	BLACK SKATE	Other non-FMP skate	Other non-FMP skate	
BLU1	NOM. BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BLUR	BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BMCK	BULLET MACKEREL	Other nongroundfish	Other nongroundfish	
BMRL	BLUE MARLIN	Other nongroundfish	Other nongroundfish	
BMSL	BLUE OR BAY MUSSEL	Other nongroundfish	Other nongroundfish	
BNK1	NOM. BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	yes
BRNZ	BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
BRW1	NOM. BROWN ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
BRWN	BROWN ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
BRZ1	NOM. BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
BSCL	BUFFALO SCULPIN	Other nongroundfish	Other nongroundfish	
BSJK	BLACK SKIPJACK	Other nongroundfish	Other nongroundfish	
BSKT	BIG SKATE	Big skate	Big skate	yes
BSOL	BUTTER SOLE	Other flatfish	Other flatfish	yes
BSRK	BLUE SHARK	Other nongroundfish	Other nongroundfish	
BSRM	UNSP. BAIT SHRIMP	Other nongroundfish	Other nongroundfish	
BTCR	BAIRDI TANNER CRAB	Tanner crab	Tanner crab	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
BTNA	BLUEFIN TUNA	Other nongroundfish	Other nongroundfish	
BTRY	BAT RAY	Other nongroundfish	Other nongroundfish	
BYEL	BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
BYL1	NOM. BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CBZ1	NOM. CABEZON	Other groundfish	Cabezon	yes
CBZN	CABEZON	Other groundfish	Cabezon	yes
CEEL	SPOTTED CUSK-EEL	Other nongroundfish	Other nongroundfish	
CHL1	NOM. CALIFORNIA HALIBUT	California halibut	California halibut	
CHLB	CALIFORNIA HALIBUT	California halibut	California halibut	
CHN1	NOM. CHINA ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CHNA	CHINA ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CHNK	CHINOOK SALMON	Other nongroundfish	Other nongroundfish	
CHUM	CHUM SALMON	Other nongroundfish	Other nongroundfish	
CKLE	BASKET COCKLE	Other nongroundfish	Other nongroundfish	
CLC1	NOM. CALICO ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CLCO	CALICO ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CLP1	NOM. CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	yes
CLPR	CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	yes
CMCK	CHUB MACKEREL	Other nongroundfish	Other nongroundfish	
CMEL	CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
CML1	NOM. CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
CMSL	CALIFORNIA MUSSEL	Other nongroundfish	Other nongroundfish	
CNR1	NOM. CANARY ROCKFISH	Canary rockfish	Canary rockfish	yes
CNRY	CANARY ROCKFISH	Canary rockfish	Canary rockfish	yes
COHO	COHO SALMON	Other nongroundfish	Other nongroundfish	
COP1	NOM. COPPER ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
COPP	COPPER ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CPLN	CAPELIN	Other nongroundfish	Other nongroundfish	
CSKT	CALIFORNIA SKATE	California skate	California skate	yes
CSL1	NOM. CURLFIN SOLE	Other flatfish	Other flatfish	yes
CSLK	CALIFORNIA SLICKHEAD	Other nongroundfish	Other nongroundfish	
CSRK	BROWN CAT SHARK	Other nongroundfish	Other nongroundfish	
CSOL	CURLFIN SOLE	Other flatfish	Other flatfish	yes
CTRB	C-O SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
CUDA	PACIFIC BARRACUDA	Other nongroundfish	Other nongroundfish	
CWC1	NOM. COWCOD ROCKFISH	Other shelf rockfish	Cowcod	yes
CWCD	COWCOD ROCKFISH	Other shelf rockfish	Cowcod	yes
DARK	DARK ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
DBR1	NOM. DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	yes
DBRK	DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	yes
DCRB	DUNGENESS CRAB	Dungeness crab	Dungeness crab	
DFLT	UNSP. DEEP FLOUNDERS	Other flatfish	Other flatfish	yes
DOVR	DOVER SOLE	Dover sole	Dover sole	yes
DRDO	DORADO	Other nongroundfish	Other nongroundfish	
DSOL	DEEPSEA SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
DSRK	SPINY DOGFISH	Spiny dogfish	Spiny dogfish	yes
DTRB	DIAMOND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
DUSK	DUSKY ROCKFISH	Other groundfish	Other groundfish	yes
DVR1	NOM. DOVER SOLE	Dover sole	Dover sole	yes
DWRF	DWARF-RED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
EELS	UNSPECIFIED EELS	Other nongroundfish	Other nongroundfish	
EGL1	NOM. ENGLISH SOLE	English sole	English sole	yes
EGLS	ENGLISH SOLE	English sole	English sole	yes
ESTR	EASTERN OYSTER	Other nongroundfish	Other nongroundfish	
ETNA	BIGEYE TUNA	Other nongroundfish	Other nongroundfish	
EULC	EULACHON	Eulachon	Eulachon	
EURO	EUROPEAN OYSTER	Other nongroundfish	Other nongroundfish	
FLAG	FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
FLG1	NOM. FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
FNTS	FANTAIL SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
FRCK	FRECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
FSOL	FLATHEAD SOLE	Other flatfish	Other flatfish	yes
GABL	GREEN ABALONE	Other nongroundfish	Other nongroundfish	
GBAS	GIANT SEA BASS	Other nongroundfish	Other nongroundfish	
GBL1	NOM. GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
GBLC	GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
GCLM	GAPER CLAM	Other nongroundfish	Other nongroundfish	
GDUK	GEODUCK	Other nongroundfish	Other nongroundfish	
GGRD	GIANT GRENADIER	Other nongroundfish	Other nongroundfish	
GKCR	GOLDEN KING CRAB	Other nongroundfish	Other nongroundfish	
GPH1	NOM. GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPHR	GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPRW	GOLDEN PRAWN	Other nongroundfish	Other nongroundfish	
GRAS	GRASS ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
GRDR	UNSP. GRENADIERS	Grenadiers	Grenadiers	yes
GREN	PACIFIC GRENADIER	Grenadiers	Grenadiers	yes
GRS1	NOM. GRASS ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
GSP1	NOM. GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	yes
GSPT	GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	yes
GSQD	GIANT SQUID	Other nongroundfish	Other nongroundfish	
GSR1	NOM. GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	yes
GSRK	GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	yes
GSRM	GHOST SHRIMP	Other nongroundfish	Other nongroundfish	
GSTG	GREEN STURGEON	Other nongroundfish	Other nongroundfish	
GTRB	GREENLAND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
HBRK	HALFBANDED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
HCLM	HORSE CLAMS	Other nongroundfish	Other nongroundfish	
HLQN	HARLEQUIN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
HNY1	NOM. HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
HNYC	HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
HTRB	HORNYHEAD TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
ISRK	BIGEYE THRESHER SHARK	Other nongroundfish	Other nongroundfish	
JCLM	CALIFORNIA JACKKNIFE CLAM	Other nongroundfish	Other nongroundfish	
JMCK	JACK MACKEREL	Other nongroundfish	Other nongroundfish	
KFSH	GIANT KELPFISH	Other nongroundfish	Other nongroundfish	
KGL1	NOM. KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLP1	NOM. KELP ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
KLPG	KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLPR	KELP ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
KMKA	KAMCHATKA FLOUNDER	Other non-FMP flatfish	Other non-FMP flatfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
KSTR	KUMAMOTO OYSTER	Other nongroundfish	Other nongroundfish	
LCD1	NOM. LINGCOD	Lingcod	Lingcod	yes
LCLM	NATIVE LITTLENECK	Other nongroundfish	Other nongroundfish	
LCOD	LINGCOD	Lingcod	Lingcod	yes
LDAB	LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LDB1	NOM. LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LOBS	CALIF. SPINY LOBSTER	Other nongroundfish	Other nongroundfish	
LSKT	LONGNOSE SKATE	Longnose skate	Longnose skate	yes
LSP1	NOM. LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	yes
LSPN	LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	yes
LSRK	LEOPARD SHARK	Other groundfish	Other groundfish	yes
LSTR	OLYMPIA OYSTER	Other nongroundfish	Other nongroundfish	
LUVR	LOUVAR	Other nongroundfish	Other nongroundfish	
MACL	MUD CLAMS	Other nongroundfish	Other nongroundfish	
MAKO	SHORTFIN MAKO SHARK	Other nongroundfish	Other nongroundfish	
MCLM	MANILA CLAM	Other nongroundfish	Other nongroundfish	
MEEL	MONKEYFACE EEL	Other nongroundfish	Other nongroundfish	
MISC	MISC. FISH/ANIMALS	Other nongroundfish	Other nongroundfish	
MOLA	COMMON MOLA	Other nongroundfish	Other nongroundfish	
MRLN	STRIPED MARLIN	Other nongroundfish	Other nongroundfish	
MSC2	MISCELLANEOUS FISH	Other nongroundfish	Other nongroundfish	
MSHP	PLAINFIN MIDSHIPMAN	Other nongroundfish	Other nongroundfish	
MSQD	MARKET SQUID	Other nongroundfish	Other nongroundfish	
MSRM	MUD SHRIMP	Other nongroundfish	Other nongroundfish	
MXR1	NOM. MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
MXRF	MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
NANC	NORTHERN ANCHOVY	Other nongroundfish	Other nongroundfish	
NRCK	NORTHERN ROCKFISH	Other groundfish	Other groundfish	yes
NSHR	NORTHERN NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
NSLF	NORTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
NSLP	NORTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
NUSF	NOR. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
NUSP	NOR. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
NUSR	NOR. UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
OABL	OTHER ABALONE	Other nongroundfish	Other nongroundfish	
OANC	OTHER ANCHOVY	Other nongroundfish	Other nongroundfish	
OBAS	OTHER BASS	Other nongroundfish	Other nongroundfish	
OCLM	OTHER CLAM	Other nongroundfish	Other nongroundfish	
OCRB	OTHER CRAB	Other nongroundfish	Other nongroundfish	
OCRK	OTHER CROAKER	Other nongroundfish	Other nongroundfish	
OCTP	UNSP. OCTOPUS	Other nongroundfish	Other nongroundfish	
ODSR	OTHER DEMERSAL RKFSH	Other groundfish	Other groundfish	yes
OECH	OTHER ECHINODERM	Other nongroundfish	Other nongroundfish	
OFLT	OTHER FLATFISH	Other flatfish	Other flatfish	yes
OGRN	OTHER GROUNDFISH	Other groundfish	Other groundfish	yes
OLV1	NOM. OLIVE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
OLVE	OLIVE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
OMSK	OTHER MOLLUSKS	Other nongroundfish	Other nongroundfish	
OPLG	OTHER PELAGIC RKFSH	Other groundfish	Other groundfish	yes
ORCK	OTHER ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	yes
ORCK	OTHER ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
ORND	OTHER ROUNDFISH	Other groundfish	Other groundfish	yes
OSCL	OTHER SCALLOP	Other nongroundfish	Other nongroundfish	
OSKT	OTHER SKATES	Unspecified skate	Unspecified skate	yes
OSLR	OTHER SLOPE RKFSH	Other slope rockfish	Other slope rockfish	yes
OSRK	OTHER SHARK	Other nongroundfish	Other nongroundfish	
OSRM	OTHER SHRIMP	Other nongroundfish	Other nongroundfish	
OSTR	OTHER OYSTER	Other nongroundfish	Other nongroundfish	
OTCR	OPILIO TANNER CRAB	Tanner crab	Tanner crab	
OTNA	OTHER TUNA	Other nongroundfish	Other nongroundfish	
OURC	OTHER SEA URCHINS	Other nongroundfish	Other nongroundfish	
OWFS	OCEAN WHITEFISH	Other nongroundfish	Other nongroundfish	
PABL	PINK ABALONE	Other nongroundfish	Other nongroundfish	
PBNT	PACIFIC BONITO	Other nongroundfish	Other nongroundfish	
PBTR	PACIFIC BUTTERFISH	Other nongroundfish	Other nongroundfish	
PCLM	PISMO CLAM	Other nongroundfish	Other nongroundfish	
PCOD	PACIFIC COD	Pacific cod	Other groundfish	yes
PDAB	PACIFIC SANDDAB	Other flatfish	Other flatfish	yes
PDB1	NOM. PACIFIC SANDDAB	Other flatfish	Other flatfish	yes
PFNS	PACIFIC FLATNOSE	Other groundfish	Other groundfish	yes
PGMY	PYGMY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PHAG	PACIFIC HAGFISH	Other nongroundfish	Other nongroundfish	
PHLB	PACIFIC HALIBUT	Other nongroundfish	Other nongroundfish	
PHRG	PACIFIC HERRING	Other nongroundfish	Other nongroundfish	
PINK	PINK SALMON	Other nongroundfish	Other nongroundfish	
PLCK	WALLEYE POLLOCK	Other groundfish	Other groundfish	yes
PNK1	NOM. PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PNKR	PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
POMF	PACIFIC POMFRET	Other nongroundfish	Other nongroundfish	
POP	PACIFIC OCEAN PERCH	Pacific ocean perch	Other slope rockfish	yes
POP1	GEN. SHELF/SLOPE RF	Other slope rockfish	Other slope rockfish	yes
POP2	NOMINAL POP	Pacific ocean perch	Other slope rockfish	yes
PRCL	PURPLE CLAM	Other nongroundfish	Other nongroundfish	
PROW	PROWFISH	Other nongroundfish	Other nongroundfish	
PRR1	NOM. PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PRRK	PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PSDN	PACIFIC SARDINE	Other nongroundfish	Other nongroundfish	
PSHP	PINK SHRIMP	Other nongroundfish	Other nongroundfish	
PSRK	PELAGIC THRESHER SHARK	Other nongroundfish	Other nongroundfish	
PSTR	PACIFIC OYSTER	Other nongroundfish	Other nongroundfish	
PTR1	NOM. PETRALE SOLE	Petrale sole	Petrale sole	yes
PTRL	PETRALE SOLE	Petrale sole	Petrale sole	yes
PUGT	PUGET SOUND ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PWHT	PACIFIC WHITING	Pacific hake	Pacific hake	yes
QCLM	NORTHERN QUAHOG CLAM	Other nongroundfish	Other nongroundfish	
QFSH	QUEENFISH	Other nongroundfish	Other nongroundfish	
QLB1	NOM. QUILLBACK ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
QLBK	QUILLBACK ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
RABL	RED ABALONE	Other nongroundfish	Other nongroundfish	
RATF	SPOTTED RATFISH	Other groundfish	Other groundfish	yes
RCK1	BOCACCIO+CHILIPEPPER RCKFSH	Other shelf rockfish	Other shelf rockfish	yes
RCK2	UNSP. BOLINA RCKFSH	Other nearshore rockfish	Other nearshore rockfish	yes
RCK3	UNSP. DPWTR REDS RCKFSH	Other slope rockfish	Other slope rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
RCK4	UNSP. REDS RCKFSH	Other groundfish	Other groundfish	yes
RCK5	UNSP. SMALL REDS RCKFSH	Other groundfish	Other groundfish	yes
RCK6	UNSP. ROSEFISH RCKFSH	Other groundfish	Other groundfish	yes
RCK7	UNSP. GOPHER RCKFSH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
RCK8	CANARY+VERMILION RCKFSH	Canary rockfish	Canary rockfish	yes
RCK9	BLACK+BLUE ROCKFISH	Black rockfish	Black rockfish	yes
RCKG	ROCK GREENLING	Other nongroundfish	Other nongroundfish	
RCLM	RAZOR CLAM	Other nongroundfish	Other nongroundfish	
RCRB	ROCK CRAB	Other nongroundfish	Other nongroundfish	
RDB1	NOM. REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	yes
RDBD	REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	yes
REDS	REDSTRIPE ROCKFISH	Redstripe rockfish (Remaining rockfish)	Other shelf rockfish	yes
REX	REX SOLE	Other flatfish	Other flatfish	yes
REX1	NOM. REX SOLE	Other flatfish	Other flatfish	yes
REYE	ROUGHEYE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
RFLT	REMAINING FLATFISH	Other flatfish	Other flatfish	yes
RGL1	NOM. ROCK GREENLING	Other nongroundfish	Other nongroundfish	
RGRN	REMAINING GROUNDFISH	Other groundfish	Other groundfish	yes
RHRG	ROUND HERRING	Other nongroundfish	Other nongroundfish	
RKCR	RED KING CRAB	Other nongroundfish	Other nongroundfish	
ROS1	NOM. ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
ROSY	ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
RPRW	RIDGEBACK PRAWN	Other nongroundfish	Other nongroundfish	
RRCK	REMAINING ROCKFISH	Other groundfish	Other groundfish	yes
RRND	REMAINING ROUNDFISH	Other groundfish	Other groundfish	yes
RSCL	RED IRISH LORD	Other nongroundfish	Other nongroundfish	
RSL1	NOM. ROCK SOLE	Other flatfish	Other flatfish	yes
RSOL	ROCK SOLE	Other flatfish	Other flatfish	yes
RSRM	GRASS SHRIMP	Other nongroundfish	Other nongroundfish	
RST1	NOM. ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
RSTN	ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
RURC	RED SEA URCHIN	Other nongroundfish	Other nongroundfish	
RZCL	ROSY RAZOR CLAM	Other nongroundfish	Other nongroundfish	
SABL	SABLEFISH	Sablefish	Sablefish	yes
SAIL	SAILFISH	Other nongroundfish	Other nongroundfish	
SARY	PACIFIC SAURY	Other nongroundfish	Other nongroundfish	
SBL1	NOM. SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	yes
SBLY	SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	yes
SCLM	SOFT-SHELLED CLAM	Other nongroundfish	Other nongroundfish	
SCLP	UNSP. SCULPIN	Other nongroundfish	Other nongroundfish	
SCOR	CALIFORNIA SCORPIONFISH	Other groundfish	Other groundfish	yes
SCR1	NOM. CALIF. SCORPIONFISH	Other groundfish	Other groundfish	yes
SDB1	NOM. SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SFL1	NOM. STARRY FLOUNDER	Starry flounder	Starry flounder	yes
SFLT	UNSP. SHALLOW FLOUNDERS	Other flatfish	Other flatfish	yes
SHAD	UNSPECIFIED SHAD	Other nongroundfish	Other nongroundfish	
SHP1	NOM. CALIFORNIA SHEEPHEAD	Other nongroundfish	Other nongroundfish	
SHPD	CALIFORNIA SHEEPHEAD	Other nongroundfish	Other nongroundfish	
SHRP	SHARPCHIN ROCKFISH	Sharpchin rockfish	Sharpchin rockfish	yes
SKCR	SCARLET KING CRAB	Other nongroundfish	Other nongroundfish	
SLGR	SILVERGREY ROCKFISH	Silvergrey rockfish	Other shelf rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
		(Remaining rockfish)		
SLNS	SLENDER SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
SMLT	UNSP. SMELT	Other nongroundfish	Other nongroundfish	
SNOS	SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	yes
SNS1	NOM. SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	yes
SOCK	SOCKEYE SALMON	Other nongroundfish	Other nongroundfish	
SPK1	NOM. SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SPKL	SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SPRW	SPOTTED PRAWN	Other nongroundfish	Other nongroundfish	
SPSK	SANDPAPER SKATE	Other non-FMP skate	Other non-FMP skate	
SQID	UNSP. SQUID	Other nongroundfish	Other nongroundfish	
SQR1	NOM. SQUARESPOT	Other shelf rockfish	Other shelf rockfish	yes
SQRS	SQUARESPOT ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SRFP	SURFPERCH SPP.	Other nongroundfish	Other nongroundfish	
SRKR	SHORTRAKER ROCKFISH	Other slope rockfish	Other slope rockfish	yes
SSCL	SHARPNOSE SCULPIN	Other nongroundfish	Other nongroundfish	
SSDB	SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
SSKT	STARRY SKATE	Other non-FMP skate	Other non-FMP skate	
SSLF	SOUTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SSLP	SOUTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
SSO1	NOM. SAND SOLE	Other flatfish	Other flatfish	yes
SSOL	SAND SOLE	Other flatfish	Other flatfish	yes
SSP1	NOM. SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	yes
SSPF	SHORTBILL SPEARFISH	Other nongroundfish	Other nongroundfish	
SSPN	SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	yes
SSRD	Deep So. Near-shore RF	Other nearshore rockfish	Other nearshore rockfish	yes
SSRK	SOUPFIN SHARK	Other groundfish	Other groundfish	yes
SSRS	Shallow So. Near-shore RF	Other nearshore rockfish	Other nearshore rockfish	yes
STAR	STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
STL1	NOM. STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
STLH	STEELHEAD	Other nongroundfish	Other nongroundfish	
STNA	SKIPJACK TUNA	Other nongroundfish	Other nongroundfish	
STR1	NOM. STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
STRK	STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
STRY	STARRY FLOUNDER	Starry flounder	Starry flounder	yes
SUSF	SOU. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SUSP	SOU. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
SWRD	SWORDFISH	Other nongroundfish	Other nongroundfish	
SWS1	NOM. SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SWSP	SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
TCOD	PACIFIC TOMCOD	Other nongroundfish	Other nongroundfish	
TGR1	NOM. TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
THD1	NOM. THORNYHEADS	Mixed thornyheads	Mixed thornyheads	yes
THDS	THORNYHEADS (MIXED)	Mixed thornyheads	Mixed thornyheads	yes
TIGR	TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
TRE1	NOM. TREEFISH	Other nearshore rockfish	Other nearshore rockfish	yes
TREE	TREEFISH	Other nearshore rockfish	Other nearshore rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
TSRK	COMMON THRESHER SHARK	Other nongroundfish	Other nongroundfish	
UABL	UNSPECIFIED ABALONE	Other nongroundfish	Other nongroundfish	
UCLM	UNSPECIFIED CLAM	Other nongroundfish	Other nongroundfish	
UCRB	UNSPECIFIED CRAB	Other nongroundfish	Other nongroundfish	
UDAB	UNSP. SANDDABS	Other flatfish	Other flatfish	yes
UDF1	UNSP. DEEP-91 FLOUNDERS	Other flatfish	Other flatfish	yes
UDF2	UNSP. DEEP-95 FLOUNDERS	Other flatfish	Other flatfish	yes
UDM1	UNSP. DEMERSAL-91	Other groundfish	Other groundfish	yes
UDNR	UNSP. DEEP NEAR-SHORE RF	Other nearshore rockfish	Other nearshore rockfish	yes
UDSR	UNSP. DEMERSAL RKFSH	Other groundfish	Other groundfish	yes
UDW1	SHORTRAKER+ROUGHEYE	Other slope rockfish	Other slope rockfish	yes
UECH	UNSPECIFIED ECHINODERM	Other nongroundfish	Other nongroundfish	
UFL1	FLOUNDERS (NO FSOL)	Other flatfish	Other flatfish	yes
UFLT	UNSP. FLATFISH	Other flatfish	Other flatfish	yes
UGLG	UNSP. GREENLING	Other nongroundfish	Other nongroundfish	
UGRN	UNSP. GROUNDFISH	Other groundfish	Other groundfish	yes
UHAG	UNSPECIFIED HAGFISH	Other nongroundfish	Other nongroundfish	
UHLB	UNSPECIFIED HALIBUT	Other nongroundfish	Other nongroundfish	
UJEL	UNSP. JELLYFISH	Other nongroundfish	Other nongroundfish	
UKCR	UNSP. KING CRAB	Other nongroundfish	Other nongroundfish	
UMCK	UNSP. MACKEREL	Other nongroundfish	Other nongroundfish	
UMSK	UNSPECIFIED MOLLUSKS	Other nongroundfish	Other nongroundfish	
UPLG	UNSP. PELAGIC RKFSH	Other groundfish	Other groundfish	yes
UPOP	UNSP. POP GROUP	Pacific ocean perch	Other slope rockfish	yes
URCK	UNSP. ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	yes
URCK	UNSP. ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	yes
URK1	SRKR+REYE+NRCK+SHRP	Other slope rockfish	Other slope rockfish	yes
URND	UNSP. ROUNDFISH	Other groundfish	Other groundfish	yes
USCL	UNSPECIFIED SCALLOP	Other nongroundfish	Other nongroundfish	
USCU	UNSP. SEA CUCUMBERS	Other nongroundfish	Other nongroundfish	
USF1	UNSP. SHALLOW-91 FLOUNDERS	Other flatfish	Other flatfish	yes
USHR	UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
USKT	UNSP. SKATE	Unspecified skate	Unspecified skate	yes
USLF	UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
USLP	UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
USLR	UNSP. SLOPE RKFSH	Other slope rockfish	Other slope rockfish	yes
USMN	UNSP. SALMON	Other nongroundfish	Other nongroundfish	
USR1	UNSP. SLOPE-91	Other groundfish	Other groundfish	yes
USR2	UNSP. SLOPE-93	Other groundfish	Other groundfish	yes
USRK	UNSP. SHARK	Other nongroundfish	Other nongroundfish	
USRM	UNSP. OCEAN SHRIMP	Other nongroundfish	Other nongroundfish	
USTG	UNSP. STURGEON	Other nongroundfish	Other nongroundfish	
USTR	UNSPECIFIED OYSTER	Other nongroundfish	Other nongroundfish	
UTCR	UNSP. TANNER CRAB	Tanner crab	Tanner crab	
UTNA	UNSPECIFIED TUNA	Other nongroundfish	Other nongroundfish	
UTRB	UNSP. TURBOTS	Other flatfish	Other flatfish	yes
UURC	UNSP. SEA URCHINS	Other nongroundfish	Other nongroundfish	
VCLM	VARNISH CLAM	Other nongroundfish	Other nongroundfish	
VRM1	NOM. VERMILLION ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
VRML	VERMILION ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
WABL	WHITE ABALONE	Other nongroundfish	Other nongroundfish	
WBAS	WHITE SEABASS	Other nongroundfish	Other nongroundfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
WCLM	WASHINGTON CLAM	Other nongroundfish	Other nongroundfish	
WCRK	WHITE CROAKER	Other nongroundfish	Other nongroundfish	
WDOW	WIDOW ROCKFISH	Widow rockfish	Widow rockfish	yes
WDW1	NOM. WIDOW ROCKFISH	Widow rockfish	Widow rockfish	yes
WEEL	WOLF EEL	Other nongroundfish	Other nongroundfish	
WHOO	WAHOO	Other nongroundfish	Other nongroundfish	
WSTG	WHITE STURGEON	Other nongroundfish	Other nongroundfish	
YEY1	NOM. YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	yes
YEYE	YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	yes
YLTL	YELLOWTAIL	Other nongroundfish	Other nongroundfish	
YMTH	YELLOWMOUTH ROCKFISH	Yellowmouth rockfish (Remaining rockfish)	Other slope rockfish	yes
YSOL	YELLOWFIN SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
YTNA	YELLOWFIN TUNA	Other nongroundfish	Other nongroundfish	
YTR1	NOM. YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	yes
YTRK	YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	yes

APPENDIX D

Species identification codes used in the Pacific Coast Fisheries Information Network (PacFIN) database and assigned to WCGOP observer data, with aggregated species groups used in this report for the nearshore fixed gear sector of the groundfish fishery.

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
ALBC	ALBACORE	Other nongroundfish	Other nongroundfish	
AKSK	ALASKA SKATE	Other non-FMP skate	Other non-FMP skate	
AMCK	ATKA MACKEREL	Other nongroundfish	Other nongroundfish	
APLC	ALASKA PLAICE	Other non-FMP flatfish	Other non-FMP flatfish	
ARR1	NOM. AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	
ARRA	AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	
ART1	NOM. ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	
ARTH	ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	
ASKT	ALEUTIAN SKATE	Other nongroundfish	Other nongroundfish	
ASRK	PACIFIC ANGEL SHARK	Other nongroundfish	Other nongroundfish	
BABL	BLACK ABALONE	Other nongroundfish	Other nongroundfish	
BANK	BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	
BCAC	BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	
BCC1	NOM. BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	
BCLM	BUTTER CLAM	Other nongroundfish	Other nongroundfish	
BGL1	NOM. BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	
BHAG	BLACK HAGFISH	Other nongroundfish	Other nongroundfish	
BISC	BROWN IRISH LORD	Brown Irish lord	Brown Irish lord	yes
BKCR	BLUE KING CRAB	Other nongroundfish	Other nongroundfish	
BLCK	BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLGL	BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	
BLK1	NOM. BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLPT	BLACK EELPOUT	Other nongroundfish	Other nongroundfish	
BLSK	BLACK SKATE	Other non-FMP skate	Other non-FMP skate	
BLU1	NOM. BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BLUR	BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BMCK	BULLET MACKEREL	Other nongroundfish	Other nongroundfish	
BMRL	BLUE MARLIN	Other nongroundfish	Other nongroundfish	
BMSL	BLUE OR BAY MUSSEL	Other nongroundfish	Other nongroundfish	
BNK1	NOM. BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	
BRNZ	BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
BRW1	NOM. BROWN ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
BRWN	BROWN ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
BRZ1	NOM. BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
BSCL	BUFFALO SCULPIN	Buffalo sculpin	Buffalo sculpin	yes
BSJK	BLACK SKIPJACK	Other nongroundfish	Other nongroundfish	
BSKT	BIG SKATE	Big skate	Big skate	
BSOL	BUTTER SOLE	Other flatfish	Other flatfish	
BSRK	BLUE SHARK	Other nongroundfish	Other nongroundfish	
BSRM	UNSP. BAIT SHRIMP	Other nongroundfish	Other nongroundfish	
BTCR	BAIRDI TANNER CRAB	Tanner crab	Tanner crab	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
BTNA	BLUEFIN TUNA	Other nongroundfish	Other nongroundfish	
BTRY	BAT RAY	Other nongroundfish	Other nongroundfish	
BYEL	BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
BYL1	NOM. BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
CBZ1	NOM. CABEZON	Cabezon	Cabezon	yes
CBZN	CABEZON	Cabezon	Cabezon	yes
CEEL	SPOTTED CUSK-EEL	Other nongroundfish	Other nongroundfish	
CHL1	NOM. CALIFORNIA HALIBUT	California halibut	California halibut	
CHLB	CALIFORNIA HALIBUT	California halibut	California halibut	
CHN1	NOM. CHINA ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
CHNA	CHINA ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
CHNK	CHINOOK SALMON	Other nongroundfish	Other nongroundfish	
CHUM	CHUM SALMON	Other nongroundfish	Other nongroundfish	
CKLE	BASKET COCKLE	Other nongroundfish	Other nongroundfish	
CLC1	NOM. CALICO ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CLCO	CALICO ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CLP1	NOM. CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	
CLPR	CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	
CMCK	CHUB MACKEREL	Other nongroundfish	Other nongroundfish	
CMEL	CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	
CML1	NOM. CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	
CMSL	CALIFORNIA MUSSEL	Other nongroundfish	Other nongroundfish	
CNR1	NOM. CANARY ROCKFISH	Canary rockfish	Canary rockfish	
CNRY	CANARY ROCKFISH	Canary rockfish	Canary rockfish	
COHO	COHO SALMON	Other nongroundfish	Other nongroundfish	
COP1	NOM. COPPER ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
COPP	COPPER ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CPLN	CAPELIN	Other nongroundfish	Other nongroundfish	
CSKT	CALIFORNIA SKATE	California skate	California skate	
CSL1	NOM. CURLFIN SOLE	Other flatfish	Other flatfish	
CSLK	CALIFORNIA SLICKHEAD	Other nongroundfish	Other nongroundfish	
CSOL	CURLFIN SOLE	Other flatfish	Other flatfish	
CSRK	BROWN CAT SHARK	Other nongroundfish	Other nongroundfish	
CTRB	C-O SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
CUDA	PACIFIC BARRACUDA	Other nongroundfish	Other nongroundfish	
CWC1	NOM. COWCOD ROCKFISH	Other shelf rockfish	Cowcod	
CWCD	COWCOD ROCKFISH	Other shelf rockfish	Cowcod	
DARK	DARK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
DBR1	NOM. DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	
DBRK	DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	
DCRB	DUNGENESS CRAB	Dungeness crab	Dungeness crab	
DFLT	UNSP. DEEP FLOUNDERS	Other flatfish	Other flatfish	
DOVR	DOVER SOLE	Dover sole	Dover sole	
DRDO	DORADO	Other nongroundfish	Other nongroundfish	
DSOL	DEEPSEA SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
DSRK	SPINY DOGFISH	Spiny dogfish	Spiny dogfish	
DTRB	DIAMOND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
DUSK	DUSKY ROCKFISH	Other groundfish	Other groundfish	
DVR1	NOM. DOVER SOLE	Dover sole	Dover sole	
DWRF	DWARF-RED ROCKFISH	Other shelf rockfish	Other shelf rockfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
EELS	UNSPECIFIED EELS	Other nongroundfish	Other nongroundfish	
EGL1	NOM. ENGLISH SOLE	English sole	English sole	
EGLS	ENGLISH SOLE	English sole	English sole	
ESTR	EASTERN OYSTER	Other nongroundfish	Other nongroundfish	
ETNA	BIGEYE TUNA	Other nongroundfish	Other nongroundfish	
EULC	EULACHON	Eulachon	Eulachon	
EURO	EUROPEAN OYSTER	Other nongroundfish	Other nongroundfish	
FLAG	FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FLG1	NOM. FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FNTS	FANTAIL SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
FRCK	FRECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FSOL	FLATHEAD SOLE	Other flatfish	Other flatfish	
GABL	GREEN ABALONE	Other nongroundfish	Other nongroundfish	
GBAS	GIANT SEA BASS	Other nongroundfish	Other nongroundfish	
GBL1	NOM. GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
GBLC	GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
GCLM	GAPER CLAM	Other nongroundfish	Other nongroundfish	
GDUK	GEODUCK	Other nongroundfish	Other nongroundfish	
GGRD	GIANT GRENADIER	Other nongroundfish	Other nongroundfish	
GKCR	GOLDEN KING CRAB	Other nongroundfish	Other nongroundfish	
GPH1	NOM. GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPHR	GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPRW	GOLDEN PRAWN	Other nongroundfish	Other nongroundfish	
GRAS	GRASS ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
GRDR	UNSP. GRENADIERS	Grenadiers	Grenadiers	
GREN	PACIFIC GRENADIER	Grenadiers	Grenadiers	
GRS1	NOM. GRASS ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
GSP1	NOM. GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	
GSPT	GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	
GSQD	GIANT SQUID	Other nongroundfish	Other nongroundfish	
GSR1	NOM. GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	
GSRK	GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	
GSRM	GHOST SHRIMP	Other nongroundfish	Other nongroundfish	
GSTG	GREEN STURGEON	Other nongroundfish	Other nongroundfish	
GTRB	GREENLAND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
HBRK	HALFBANDED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HCLM	HORSE CLAMS	Other nongroundfish	Other nongroundfish	
HLQN	HARLEQUIN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HNY1	NOM. HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HNYC	HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HTRB	HORNYHEAD TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
ISRK	BIGEYE THRESHER SHARK	Other nongroundfish	Other nongroundfish	
JCLM	CALIFORNIA JACKKNIFE CLAM	Other nongroundfish	Other nongroundfish	
JMCK	JACK MACKEREL	Other nongroundfish	Other nongroundfish	
KFSH	GIANT KELPFISH	Other nongroundfish	Other nongroundfish	
KGL1	NOM. KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLP1	NOM. KELP ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
KLPG	KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLPR	KELP ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
KMKA	KAMCHATKA FLOUNDER	Other non-FMP flatfish	Other non-FMP flatfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
KSTR	KUMAMOTO OYSTER	Other nongroundfish	Other nongroundfish	
LCD1	NOM. LINGCOD	Lingcod	Lingcod	yes
LCLM	NATIVE LITTLENECK	Other nongroundfish	Other nongroundfish	
LCOD	LINGCOD	Lingcod	Lingcod	yes
LDAB	LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LDB1	NOM. LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LOBS	CALIF. SPINY LOBSTER	Other nongroundfish	Other nongroundfish	
LSKT	LONGNOSE SKATE	Longnose skate	Longnose skate	
LSP1	NOM. LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	
LSPN	LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	
LSRK	LEOPARD SHARK	Other groundfish	Other groundfish	
LSTR	OLYMPIA OYSTER	Other nongroundfish	Other nongroundfish	
LUVR	LOUVAR	Other nongroundfish	Other nongroundfish	
MACL	MUD CLAMS	Other nongroundfish	Other nongroundfish	
MAKO	SHORTFIN MAKO SHARK	Other nongroundfish	Other nongroundfish	
MCLM	MANILA CLAM	Other nongroundfish	Other nongroundfish	
MEEL	MONKEYFACE EEL	Other nongroundfish	Other nongroundfish	
MISC	MISC. FISH/ANIMALS	Other nongroundfish	Other nongroundfish	
MOLA	COMMON MOLA	Other nongroundfish	Other nongroundfish	
MRLN	STRIPED MARLIN	Other nongroundfish	Other nongroundfish	
MSC2	MISCELLANEOUS FISH	Other nongroundfish	Other nongroundfish	
MSHP	PLAINFIN MIDSHIPMAN	Other nongroundfish	Other nongroundfish	
MSQD	MARKET SQUID	Other nongroundfish	Other nongroundfish	
MSRM	MUD SHRIMP	Other nongroundfish	Other nongroundfish	
MXR1	NOM. MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
MXRF	MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NANC	NORTHERN ANCHOVY	Other nongroundfish	Other nongroundfish	
NRCK	NORTHERN ROCKFISH	Other groundfish	Other groundfish	
NSHR	NORTHERN NEAR-SHORE ROCKFISH	Other nearshore rockfish	Northern nearshore rockfish	yes
NSLF	NORTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NSLP	NORTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
NUSF	NOR. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NUSP	NOR. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
NUSR	NOR. UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Northern nearshore rockfish	yes
OABL	OTHER ABALONE	Other nongroundfish	Other nongroundfish	
OANC	OTHER ANCHOVY	Other nongroundfish	Other nongroundfish	
OBAS	OTHER BASS	Other nongroundfish	Other nongroundfish	
OCLM	OTHER CLAM	Other nongroundfish	Other nongroundfish	
OCRB	OTHER CRAB	Other nongroundfish	Other nongroundfish	
OCRK	OTHER CROAKER	Other nongroundfish	Other nongroundfish	
OCTP	UNSP. OCTOPUS	Other nongroundfish	Other nongroundfish	
ODSR	OTHER DEMERSAL RKFSH	Other groundfish	Other groundfish	
OECH	OTHER ECHINODERM	Other nongroundfish	Other nongroundfish	
OFLT	OTHER FLATFISH	Other flatfish	Other flatfish	
OGRN	OTHER GROUNDFISH	Other groundfish	Other groundfish	
OLV1	NOM. OLIVE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
OLVE	OLIVE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
OMSK	OTHER MOLLUSKS	Other nongroundfish	Other nongroundfish	
OPLG	OTHER PELAGIC RKFSH	Other groundfish	Other groundfish	
ORCK	OTHER ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	
ORCK	OTHER ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
ORND	OTHER ROUNDFISH	Other groundfish	Other groundfish	
OSCL	OTHER SCALLOP	Other nongroundfish	Other nongroundfish	
OSKT	OTHER SKATES	Unspecified skate	Unspecified skate	
OSLR	OTHER SLOPE RKFSH	Other slope rockfish	Other slope rockfish	
OSRK	OTHER SHARK	Other nongroundfish	Other nongroundfish	
OSRM	OTHER SHRIMP	Other nongroundfish	Other nongroundfish	
OSTR	OTHER OYSTER	Other nongroundfish	Other nongroundfish	
OTCR	OPILIO TANNER CRAB	Tanner crab	Tanner crab	
OTNA	OTHER TUNA	Other nongroundfish	Other nongroundfish	
OURC	OTHER SEA URCHINS	Other nongroundfish	Other nongroundfish	
OWFS	OCEAN WHITEFISH	Other nongroundfish	Other nongroundfish	
PABL	PINK ABALONE	Other nongroundfish	Other nongroundfish	
PBNT	PACIFIC BONITO	Other nongroundfish	Other nongroundfish	
PBTR	PACIFIC BUTTERFISH	Other nongroundfish	Other nongroundfish	
PCLM	PISMO CLAM	Other nongroundfish	Other nongroundfish	
PCOD	PACIFIC COD	Pacific cod	Other groundfish	
PDAB	PACIFIC SANDDAB	Other flatfish	Other flatfish	
PDB1	NOM. PACIFIC SANDDAB	Other flatfish	Other flatfish	
PFNS	PACIFIC FLATNOSE	Other groundfish	Other groundfish	
PGMY	PYGMY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PHAG	PACIFIC HAGFISH	Other nongroundfish	Other nongroundfish	
PHLB	PACIFIC HALIBUT	Other nongroundfish	Other nongroundfish	
PHRG	PACIFIC HERRING	Other nongroundfish	Other nongroundfish	
PINK	PINK SALMON	Other nongroundfish	Other nongroundfish	
PLCK	WALLEYE POLLOCK	Other groundfish	Other groundfish	
PNK1	NOM. PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PNKR	PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
POMF	PACIFIC POMFRET	Other nongroundfish	Other nongroundfish	
POP	PACIFIC OCEAN PERCH	Pacific ocean perch	Other slope rockfish	
POP1	GEN. SHELF/SLOPE RF	Other slope rockfish	Other slope rockfish	
POP2	NOMINAL POP	Pacific ocean perch	Other slope rockfish	
PRCL	PURPLE CLAM	Other nongroundfish	Other nongroundfish	
PROW	PROWFISH	Other nongroundfish	Other nongroundfish	
PRR1	NOM. PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PRRK	PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PSDN	PACIFIC SARDINE	Other nongroundfish	Other nongroundfish	
PSHP	PINK SHRIMP	Other nongroundfish	Other nongroundfish	
PSRK	PELAGIC THRESHER SHARK	Other nongroundfish	Other nongroundfish	
PSTR	PACIFIC OYSTER	Other nongroundfish	Other nongroundfish	
PTR1	NOM. PETRALE SOLE	Petrale sole	Petrale sole	
PTRL	PETRALE SOLE	Petrale sole	Petrale sole	
PUGT	PUGET SOUND ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PWHT	PACIFIC WHITING	Pacific hake	Pacific hake	
QCLM	NORTHERN QUAHOG CLAM	Other nongroundfish	Other nongroundfish	
QFSH	QUEENFISH	Other nongroundfish	Other nongroundfish	
QLB1	NOM. QUILLBACK ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
QLBK	QUILLBACK ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
RABL	RED ABALONE	Other nongroundfish	Other nongroundfish	
RATF	SPOTTED RATFISH	Other groundfish	Other groundfish	
RCK1	BOCACCIO+CHILIPEPPER RCKFSH	Other shelf rockfish	Other shelf rockfish	
RCK2	UNSP. BOLINA RCKFSH	Other nearshore rockfish	Deeper nearshore rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
RCK3	UNSP. DPWTR REDS RCKFSH	Other slope rockfish	Other slope rockfish	
RCK4	UNSP. REDS RCKFSH	Other groundfish	Other groundfish	
RCK5	UNSP. SMALL REDS RCKFSH	Other groundfish	Other groundfish	
RCK6	UNSP. ROSEFISH RCKFSH	Other groundfish	Other groundfish	
RCK7	UNSP. GOPHER RCKFSH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
RCK8	CANARY+VERMILION RCKFSH	Canary rockfish	Canary rockfish	
RCK9	BLACK+BLUE ROCKFISH	Black rockfish	Black rockfish	yes
RCKG	ROCK GREENLING	Other greenling	Other greenling	
RCLM	RAZOR CLAM	Other nongroundfish	Other nongroundfish	
RCRB	ROCK CRAB	Other nongroundfish	Other nongroundfish	
RDB1	NOM. REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	
RDBD	REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	
REDS	REDSTRIPE ROCKFISH	Redstripe rockfish (Remaining rockfish)	Other slope rockfish	
REX	REX SOLE	Other flatfish	Other flatfish	
REX1	NOM. REX SOLE	Other flatfish	Other flatfish	
REYE	ROUGHEYE ROCKFISH	Other slope rockfish	Other slope rockfish	
RFLT	REMAINING FLATFISH	Other flatfish	Other flatfish	
RGL1	NOM. ROCK GREENLING	Other greenling	Other greenling	
RGRN	REMAINING GROUNDFISH	Other groundfish	Other groundfish	
RHRG	ROUND HERRING	Other nongroundfish	Other nongroundfish	
RKCR	RED KING CRAB	Other nongroundfish	Other nongroundfish	
ROS1	NOM. ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
ROSY	ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RPRW	RIDGEBACK PRAWN	Other nongroundfish	Other nongroundfish	
RRCK	REMAINING ROCKFISH	Other groundfish	Other groundfish	
RRND	REMAINING ROUNDFISH	Other groundfish	Other groundfish	
RSCL	RED IRISH LORD	Red Irish lord	Red Irish lord	yes
RSL1	NOM. ROCK SOLE	Other flatfish	Other flatfish	
RSOL	ROCK SOLE	Other flatfish	Other flatfish	
RSRM	GRASS SHRIMP	Other nongroundfish	Other nongroundfish	
RST1	NOM. ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RSTN	ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RURC	RED SEA URCHIN	Other nongroundfish	Other nongroundfish	
RZCL	ROSY RAZOR CLAM	Other nongroundfish	Other nongroundfish	
SABL	SABLEFISH	Sablefish	Sablefish	
SAIL	SAILFISH	Other nongroundfish	Other nongroundfish	
SARY	PACIFIC SAURY	Other nongroundfish	Other nongroundfish	
SBL1	NOM. SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	
SBLY	SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	
SCLM	SOFT-SHELLED CLAM	Other nongroundfish	Other nongroundfish	
SCLP	UNSP. SCULPIN	Other nongroundfish	Other nongroundfish	
SCOR	CALIFORNIA SCORPIONFISH	Other groundfish	Other groundfish	yes
SCR1	NOM. CALIF. SCORPIONFISH	Other groundfish	Other groundfish	yes
SDB1	NOM. SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SFL1	NOM. STARRY FLOUNDER	Starry flounder	Starry flounder	
SFLT	UNSP. SHALLOW FLOUNDERS	Other flatfish	Other flatfish	
SHAD	UNSPECIFIED SHAD	Other nongroundfish	Other nongroundfish	
SHP1	NOM. CALIFORNIA SHEEPHEAD	California sheephead	California sheephead	yes
SHPD	CALIFORNIA SHEEPHEAD	California sheephead	California sheephead	yes
SHRP	SHARPCHIN ROCKFISH	Sharpchin rockfish	Sharpchin rockfish	
SKCR	SCARLET KING CRAB	Other nongroundfish	Other nongroundfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
SLGR	SILVERGREY ROCKFISH	Silvergray rockfish (Remaining rockfish)	Other shelf rockfish	
SLNS	SLENDER SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
SMLT	UNSP. SMELT	Other nongroundfish	Other nongroundfish	
SNOS	SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	
SNS1	NOM. SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	
SOCK	SOCKEYE SALMON	Other nongroundfish	Other nongroundfish	
SPK1	NOM. SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SPKL	SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SPRW	SPOTTED PRAWN	Other nongroundfish	Other nongroundfish	
SPSK	SANDPAPER SKATE	Other non-FMP skate	Other non-FMP skate	
SQID	UNSP. SQUID	Other nongroundfish	Other nongroundfish	
SQR1	NOM. SQUARESPOT	Other shelf rockfish	Other shelf rockfish	
SQRS	SQUARESPOT ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SRFP	SURFPERCH SPP.	Other nongroundfish	Other nongroundfish	
SRKR	SHORTRAKER ROCKFISH	Other slope rockfish	Other slope rockfish	
SSCL	SHARPNOSE SCULPIN	Other nongroundfish	Other nongroundfish	
SSDB	SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
SSKT	STARRY SKATE	Other non-FMP skate	Other non-FMP skate	
SSLF	SOUTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SSLP	SOUTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
SSO1	NOM. SAND SOLE	Other flatfish	Other flatfish	
SSOL	SAND SOLE	Other flatfish	Other flatfish	
SSPF	SHORTBILL SPEARFISH	Other nongroundfish	Other nongroundfish	
SSP1	NOM. SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	
SSPN	SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	
SSRD	Deep So. Near-shore RF	Southern nearshore rockfish	Deeper nearshore rockfish	yes
SSRK	SOUPFIN SHARK	Other groundfish	Other groundfish	
SSRS	Shallow So. Near-shore RF	Southern nearshore rockfish	Shallow nearshore rockfish	yes
STAR	STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STL1	NOM. STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STLH	STEELHEAD	Other nongroundfish	Other nongroundfish	
STNA	SKIPJACK TUNA	Other nongroundfish	Other nongroundfish	
STR1	NOM. STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STRK	STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STRY	STARRY FLOUNDER	Starry flounder	Starry flounder	
SUSF	SOU. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SUSP	SOU. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
SWRD	SWORDFISH	Other nongroundfish	Other nongroundfish	
SWS1	NOM. SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SWSP	SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
TCOD	PACIFIC TOMCOD	Other nongroundfish	Other nongroundfish	
TGR1	NOM. TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	
THD1	NOM. THORNYHEADS	Mixed thornyheads	Mixed thornyheads	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
THDS	THORNYHEADS (MIXED)	Mixed thornyheads	Mixed thornyheads	
TIGR	TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	
TRE1	NOM. TREEFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
TREE	TREEFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
TSRK	COMMON THRESHER SHARK	Other nongroundfish	Other nongroundfish	
UABL	UNSPECIFIED ABALONE	Other nongroundfish	Other nongroundfish	
UCLM	UNSPECIFIED CLAM	Other nongroundfish	Other nongroundfish	
UCRB	UNSPECIFIED CRAB	Other nongroundfish	Other nongroundfish	
UDAB	UNSP. SANDDABS	Other flatfish	Other flatfish	
UDF1	UNSP. DEEP-91 FLOUNDERS	Other flatfish	Other flatfish	
UDF2	UNSP. DEEP-95 FLOUNDERS	Other flatfish	Other flatfish	
UDM1	UNSP. DEMERSAL-91	Other groundfish	Other groundfish	
UDNR	UNSP. DEEP NEAR-SHORE RF	Other nearshore rockfish	Deeper nearshore rockfish	yes
UDSR	UNSP. DEMERSAL RKFSH	Other groundfish	Other groundfish	
UDW1	SHORTRAKER+ROUGHEYE	Other slope rockfish	Other slope rockfish	
UECH	UNSPECIFIED ECHINODERM	Other nongroundfish	Other nongroundfish	
UFL1	FLOUNDERS (NO FSOL)	Other flatfish	Other flatfish	
UFLT	UNSP. FLATFISH	Other flatfish	Other flatfish	
UGLG	UNSP. GREENLING	Other greenling	Other greenling	yes
UGRN	UNSP. GROUNDFISH	Other groundfish	Other groundfish	
UHAG	UNSPECIFIED HAGFISH	Other nongroundfish	Other nongroundfish	
UHLB	UNSPECIFIED HALIBUT	Other nongroundfish	Other nongroundfish	
UJEL	UNSP. JELLYFISH	Other nongroundfish	Other nongroundfish	
UKCR	UNSP. KING CRAB	Other nongroundfish	Other nongroundfish	
UMCK	UNSP. MACKEREL	Other nongroundfish	Other nongroundfish	
UMSK	UNSPECIFIED MOLLUSKS	Other nongroundfish	Other nongroundfish	
UPLG	UNSP. PELAGIC RKFSH	Other groundfish	Other groundfish	
UPOP	UNSP. POP GROUP	Pacific ocean perch	Other slope rockfish	
URCK	UNSP. ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	
URCK	UNSP. ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	
URK1	SRKR+REYE+NRCK+SHRP	Other slope rockfish	Other slope rockfish	
URND	UNSP. ROUNDFISH	Other groundfish	Other groundfish	
USCL	UNSPECIFIED SCALLOP	Other nongroundfish	Other nongroundfish	
USCU	UNSP. SEA CUCUMBERS	Other nongroundfish	Other nongroundfish	
USF1	UNSP. SHALLOW-91 FLOUNDERS	Other flatfish	Other flatfish	
USHR	UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes
USHR	UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
USKT	UNSP. SKATE	Unspecified skate	Unspecified skate	
USLF	UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
USLP	UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
USLR	UNSP. SLOPE RKFSH	Other slope rockfish	Other slope rockfish	
USMN	UNSP. SALMON	Other nongroundfish	Other nongroundfish	
USR1	UNSP. SLOPE-91	Other groundfish	Other groundfish	
USR2	UNSP. SLOPE-93	Other groundfish	Other groundfish	
USRK	UNSP. SHARK	Other nongroundfish	Other nongroundfish	
USRM	UNSP. OCEAN SHRIMP	Other nongroundfish	Other nongroundfish	
USTG	UNSP. STURGEON	Other nongroundfish	Other nongroundfish	
USTR	UNSPECIFIED OYSTER	Other nongroundfish	Other nongroundfish	
UTCR	UNSP. TANNER CRAB	Tanner crab	Tanner crab	
UTNA	UNSPECIFIED TUNA	Other nongroundfish	Other nongroundfish	
UTRB	UNSP. TURBOTS	Other flatfish	Other flatfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
UURC	UNSP. SEA URCHINS	Other nongroundfish	Other nongroundfish	
VCLM	VARNISH CLAM	Other nongroundfish	Other nongroundfish	
VRM1	NOM. VERMILLION ROCKFISH	Other shelf rockfish	Other shelf rockfish	
VRML	VERMILION ROCKFISH	Other shelf rockfish	Other shelf rockfish	
WABL	WHITE ABALONE	Other nongroundfish	Other nongroundfish	
WBAS	WHITE SEABASS	Other nongroundfish	Other nongroundfish	
WCLM	WASHINGTON CLAM	Other nongroundfish	Other nongroundfish	
WCRK	WHITE CROAKER	Other nongroundfish	Other nongroundfish	
WDOW	WIDOW ROCKFISH	Widow rockfish	Widow rockfish	
WDW1	NOM. WIDOW ROCKFISH	Widow rockfish	Widow rockfish	
WEEL	WOLF EEL	Other nongroundfish	Other nongroundfish	
WHOO	WAHOO	Other nongroundfish	Other nongroundfish	
WSTG	WHITE STURGEON	Other nongroundfish	Other nongroundfish	
YEY1	NOM. YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	
YEYE	YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	
YLTL	YELLOWTAIL	Other nongroundfish	Other nongroundfish	
YMTH	YELLOWMOUTH ROCKFISH	Yellowmouth rockfish (Remaining rockfish)	Other slope rockfish	
YSOL	YELLOWFIN SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
YTNA	YELLOWFIN TUNA	Other nongroundfish	Other nongroundfish	
YTR1	NOM. YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	
YTRK	YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	

Science, Service, Stewardship

Agenda Item H.2.b
Supplemental NMFS Total Mortality Report
(Website Distribution Only)
November 2010

NOAA
FISHERIES
SERVICE

Estimated Discard and Total Catch of Selected Groundfish Species in the 2009 US West Coast Fisheries

Marlene Bellman[1]
Eliza Heery[2]
Jason Janot[1]
Janell Majewski[1]

Publication date: October 15, 2010

U.S. Department of Commerce | National Oceanic and Atmospheric Administration | National Marine Fisheries Service

This document should be cited as follows:

Bellman, M.A., E. Heery, J. Jannot, and J. Majewski. 2010. Estimated discard and total catch of selected groundfish species in the 2009 U.S. west coast fisheries. West Coast Groundfish Observer Program. National Marine Fisheries Service, NWFSC, 2725 Montlake Blvd E., Seattle, WA 98112.

[1]West Coast Groundfish Observer Program
National Marine Fisheries Service
Northwest Fisheries Science Center
Fishery Resource Analysis and Monitoring Division
2725 Montlake Blvd E
Seattle, WA 98112

[2] Pacific States Marine Fisheries Commission
Northwest Fisheries Science Center
2725 Montlake Blvd E
Seattle, WA 9811

TABLE OF CONTENTS

Introduction

The primary objective of this report is to determine total fishing mortality for groundfish species in U.S. west coast fisheries in 2009 in order to evaluate their status relative to Acceptable Biological Catch (ABC) and Optimum Yield (OY) harvest management goals. The ABC is a biologically based estimate of the amount of fish that may be harvested by the fishery each year without jeopardizing the resource and is used to set the upper limit of the annual total allowable catch. An OY is defined as the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and taking into the account the protection of marine ecosystems. Both of these management goals are published in the federal groundfish regulations each year for selected groundfish species (50 CFR 660 Subpart G). This report summarizes estimates of 2009 discarded catch, retained landings, and total fishing mortality of the species published in federal regulations and compares mortality estimates to OY and ABC harvest management goals for 2009.

Our inventory of 2009 total fishing mortality includes summaries from the following groundfish fishery sectors (*****Sectors with observer program data used for analyses and discard estimation in this report.):

- Commercial limited entry (LE) non-midwater trawl*****
- Commercial limited entry non-midwater trawl - targeting California halibut*****
- Commercial open access (OA) non-midwater trawl - targeting California halibut*****
- Commercial fixed gear state-permitted nearshore (Oregon/California)*****
- Commercial fixed gear limited entry sablefish primary (tier endorsed)*****
- Commercial fixed gear limited entry non-primary sablefish (non-endorsed and daily trip limit sectors)*****
- Commercial fixed gear open access daily trip limit*****
- At-sea Pacific hake/whiting catcher-processor*****
- At-sea Pacific hake/whiting mothership*****
- At-sea Pacific hake/whiting tribal*****
- Exempted fishing permit
- Commercial limited entry midwater trawl (shoreside hake)
- Tribal (shoreside fisheries)
- Recreational (Washington/Oregon/California)
- Research

Other non-groundfish fisheries included with incidental catch of groundfish species:

Commercial shrimp trawl – north of 40° 10’ N latitude*****
Commercial shrimp trawl – south of 40° 10’ N latitude
Commercial open access midwater trawl
Commercial open access non-midwater trawl – not targeting California halibut
Commercial other gear groups - not trawl, shrimp trawl, or fixed-gear
Commercial OA and LE fixed gear non-nearshore, non-sablefish –
LE only north of 36° N latitude (see methods section)
Other exempted fishing permits

Data Sources

This report includes an inventory of groundfish fishing mortality from all available sources, as well as results from discard estimation analyses. Data sources used in this report include landing receipt data (referred to as fish tickets), trawl logbook data, onboard observer data, recreational data provided by state agencies, research catch data provided by NOAA's Northwest Regional Office (NWR), and additional information from the Pacific Fishery Management Council's (PFMC) Groundfish Management Team (GMT).

Records of fleet-wide landings are the cornerstone of retained catch information for all sectors of the commercial groundfish fishery on the west coast. Landing receipts are completed by fish-buyers in each port for each delivery of fish by a vessel. Fish tickets are trip-aggregated sales receipts by market categories. They are issued to fish-buyers by a state agency and must be returned to the agency for processing. Fish tickets are designed by the individual states, and Washington, Oregon, and California each have a slightly different format of receipt. In addition, each state conducts species-composition sampling for numerous market categories that are reported on fish tickets. Market categories represent either a single species or a mixture of species. Fish ticket and species-composition data are submitted by state agencies to the Pacific Coast Fisheries Information Network (PacFIN) regional database, which is maintained by the Pacific States Marine Fisheries Commission (PSMFC). Percentages for the species composition within market categories were applied to the fish ticket data used in our analyses. As such, landed weights from sampled market categories were distributed to individual species whenever possible.

Fish ticket landings data for the calendar year of 2009 were retrieved from the PacFIN database and subsequently divided into various sectors of the groundfish fishery as indicated in Figure 1. All additional data processing steps that were applied during the discard estimation process are described in the methods section below.

Logbook record-keeping is a state-mandated requirement for the LE groundfish trawl sector in Washington, Oregon, and California. A common-format logbook is used by all three states and completed logbook information is entered into state agency databases. The electronic logbook data are then submitted by state agencies to the PacFIN regional database.

Trawl logbook data for the calendar year 2009 were retrieved from the PacFIN database and divided into various sectors of the groundfish fishery as indicated in Figure 1. All additional data processing steps that were applied during the discard estimation process are described in the methods section below. Logbook data from the open-access groundfish trawl sector were not included in our analyses.

Discard estimation analyses focused on commercial groundfish fishery sectors in which the Northwest Fishery Science Center (NWFSC) Fishery Resource Analysis and Monitoring Division (FRAM) has conducted scientific at-sea observation of discards. The West Coast Groundfish Observer Program (WCGOP) and the At-Sea Hake Observer Program (A-SHOP) observe distinct sectors of the groundfish fishery. The WCGOP observes a number of different sectors of the groundfish fishery, including the limited entry (LE) groundfish bottom trawl, limited entry and open access (OA) fixed gear, and state-permitted nearshore fixed gear sectors. The WCGOP also observes several fisheries that incidentally catch groundfish, including the California halibut trawl and pink shrimp trawl fisheries. WCGOP data from each of these groundfish sectors and fisheries were used for the purposes of discard estimation. Observations by the A-SHOP from the catcher-processor, mothership, and tribal components of the at-sea Pacific hake/whiting fishery were also used for mortality estimates in this report.

The WCGOP was established in 2001 by NOAA Fisheries (National Marine Fisheries Service, NMFS) (66 FR 20609). All commercial vessels that land groundfish caught in the United States Exclusive Economic Zone (EEZ) from 3-200 miles offshore are required to carry an observer when notified to do so by NMFS or its designated agent. Subsequent state rule-making also requires vessels that fish for groundfish within 3 miles of shore or participate in other state-managed fisheries to carry WCGOP observers when notified. The WCGOP's goal is to improve total catch estimates by collecting information on the discarded catch (fish returned overboard at-sea) of west coast groundfish species. The WCGOP coverage plan details program goals, vessel selection, observer coverage, and basic data collection (NWFSC 2006). A list of fisheries in order of coverage priority and detailed information on data collection methods employed in each observed fishery can be found in the WCGOP manual (NWFSC 2009).

The sampling protocol employed by the WCGOP is primarily focused on the discarded portion of catch. In order to ensure that the recorded weights for the retained portion of the observed catch are accurate, haul-level retained catch recorded by WCGOP observers are reconciled with trip-level fish ticket records. The WCGOP data are linked to fish tickets by fish ticket number(s) obtained by the observer and are adjusted so that the total trip pounds of retained fish equals the total trip pounds on the fish ticket. This is done because the fish ticket weight is more accurate and fish tickets are legally binding documents. These steps are described in further detail in annual reports produced by the WCGOP (http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/index.cfm) and were conducted prior to the analyses presented in this report. All additional data processing steps that were applied to the WCGOP data during the discard estimation process are described in the methods section below.

The At-Sea Hake Observer Program (A-SHOP) has conducted observations of the west coast at-sea Pacific hake/whiting fishery since 2001. Prior observations were conducted by the North Pacific Groundfish Observer Program. A-SHOP program information and documentation on data collection methods can be found in the observer manual (AFSC 2009). The at-sea hake/whiting fishery has 100% mandatory observer coverage, with each processor over 125' carrying two observers.

Each year, a certain portion the OY and ABC for groundfish species is harvested through various research activities. In 2009, research programs that caught groundfish included the NWFSC's groundfish bottom trawl, pre-recruit, hook and line surveys, and the International Pacific Halibut Commission's (IPHC) longline survey, as well as other programs or scientific research permits. All groundfish research catch information was provided to NOAA's Northwest Regional Office (NWR). These data were then summarized by the NWR and included in this report.

In addition to these data sources, further information provided by the GMT was also used in the total mortality estimation process. The GMT is an advisory body to the PFMC that is comprised of representatives from federal, state, and Tribal agencies and is involved in evaluating management performance and alternatives for groundfish fisheries between the U.S. borders with Canada and Mexico. The GMT analyzes catch-related information from all sectors of the groundfish fishery to assist in groundfish management. For the purposes of this analysis, the GMT provided mortality rates, which are assumptions regarding the survival of discards, for sablefish and lingcod in the trawl and fixed gear sectors and for the major species groupings reported in the state-permitted fixed gear nearshore sector.

Methods

Discard Estimation Methods

We used a deterministic approach to estimate discard mortality for all sectors of the groundfish fishery for which WCGOP observer data were available. Through this approach, observed discard rates for each species were directly expanded to the fleet-wide level. First, discard ratios were computed from observer data as the discarded weight of a particular species/species group divided by the weight of retained catch of either all groundfish (excluding Pacific hake), sablefish, or other targeted species. Denominators differed for each sector of the fishery based on the targeting behavior of that sector. Discard ratios were then multiplied by the total fleet-wide landed weight of groundfish, sablefish or other species (depending on the denominator used to compute observed discard ratios). This provided an expanded estimate of fleet-wide discard weight for each species. Because of differences in data availability and management structure among the various sectors of the groundfish fishery, this approach was applied with slight modifications for each sector. In order to outline each of these modifications explicitly, more detailed methodology of discard estimation is presented for each sector below.

Limited Entry Bottom Trawl Sector

Fleet-wide discard estimates for the LE bottom (non-midwater) trawl sector were derived from WCGOP observer data, fish ticket landings data, and trawl logbook data. Fish ticket and logbook data were isolated for this sector based on processing steps outlined in Figure 1. A summary of observer data for the 2009 LE bottom (non-midwater) trawl sector is presented in the WCGOP data report and summary analyses of the U.S. west coast limited entry groundfish bottom trawl fishery published in October 2010 (NWFSC 2010a).

LE bottom trawl vessels can hold a California halibut bottom trawl permit and participate in the state-permitted California halibut fishery. California halibut tows can occur on the same trip as tows targeting groundfish and were identified in logbook and observer data based on the following criteria: 1) the tow target was California halibut or 2) the tow target was nearshore mix, sand sole, or other flatfish, and the tow took place in less than 30 fathoms and south of 40°10' N. latitude. All tows in the observer and logbook data that met at least one of the above requirements were removed from the LE bottom trawl data sets and included as data for the California halibut fishery (see below). Whether in observer or logbook data, the tow target was typically determined by the vessel captain.

Several additional filtering steps were then applied to the data in order to ensure that we had distinguished data for the LE bottom trawl sector appropriately. First, we investigated fish ticket data for landings of more than 2 mt of Pacific hake on a given day, in order to remove them and thus exclude effort that was targeted exclusively towards this species. A similar check was performed on the observer and logbook data, such that tows with more than 2 mt of retained Pacific hake were flagged for removal. On the basis of the Pacific hake catch criterion, five observed tows and one logbook tow met the criterion and all were removed from the 2009 data before analyses.

Next, trawl logbook and observer data were filtered to ensure that all spatial and temporal information was complete. Any tows lacking a recorded depth or latitude were removed. None of the tows in the 2009 observer data met these criteria. However, 13 tows were removed from the 2009 logbook data set due to a lack of depth information.

Observer data and trawl logbook data were then stratified by management area, depth, and season (Table 1). Records were separated into two groundfish management areas, north and south of 40° 10' N. latitude. Each management area was divided into three depth strata (0-125, 126-250, >250 fathoms). Two-month cumulative trip limit periods were combined to form two seasonal strata: winter (November-April) and summer (May-October). In some cases, if the numbers of observations in particular strata were too limited, data were aggregated across depth strata. In the south during the winter, data were combined across the two shallowest depth strata (0-125 and 126-250 fathoms). Aggregated strata are shown in Table 1, which presents the spatial and temporal distribution of tows and retained FMP groundfish (excluding Pacific hake) weight in the 2009 observer and trawl logbook data.

A similar table for the 2008 LE bottom trawl fishery was provided in the previous groundfish total mortality report (Bellman et al. 2009, Table 1). It is unclear how the process of combining strata may influence discard and bycatch ratios. The validity of stratification in terms of isolating variance in discard has not yet been objectively tested. Until more work can be completed to evaluate which strata (area/depth/season) are most appropriate for this discard analysis, broader stratification is warranted. The broader depth strata used in the present analysis continue to highlight the areas shoreward and seaward of RCA closures relevant in the fishery management framework. Broader depth stratification also provides consistency when evaluating discard or bycatch over time, as depth-based spatial closures change on a yearly basis. The depth strata utilized in this report were also used in analyses which evaluated discard and total mortality estimates over time, using all available years of WCGOP data from 2002-2008 (Bellman and Heery In Preparation).

It should be noted that this stratification scheme is inconsistent with the sampling design employed by the WCGOP. The authors recognize this fact, but used this method in order to provide estimates that were relevant within the spatial and temporal structure of groundfish management. Measures of uncertainty are not provided within this context, as they would be biased by post-stratification.

Once data had been stratified, discard ratios were computed from the observer data and multiplied by logbook catch weights in each stratum (Figure 2). This was done according to the following equation:

$$\hat{D}_{sxab} = \frac{\sum_t d_{sxt}}{\sum_t r_{xt}} \times \sum_t R_{xabt}$$

where:

- *s*: species or species group
- *x*: index strata (area, depth, season)
- *a*: state of landing (Washington, Oregon or California)
- *b*: bimonthly period (Jan-Feb, Mar-Apr, … , Nov-Dec)
- *t*: tows *d*: observed discard weight of species *s*
- *r*: observed retained weight of all FMP groundfish excluding Pacific hake
- *R*: weight of retained FMP groundfish (excluding Pacific hake) recorded in logbooks
- $\hat{D}$: initial discard estimate for species *s* in stratum *x*, state *a* and bimonthly period *b*

Note that the denominator of observed discard ratios and the logbook expansion factor differed from those used in total mortality analyses of data prior to calendar year 2007, in that the present rates include all FMP groundfish retained weight excluding Pacific hake. Prior to analysis of 2007 data, discard ratio denominators and logbook expansion factors included either the retained weights of individual species or the retained weight of a group of target species. The current approach was favored after an internal examination of the methodology revealed that discard estimates computed using retained weights from individual target species were more susceptible to errors caused by inconsistent species codes in the observer, logbook and fish ticket data sets. We chose to include all groundfish excluding Pacific hake in the denominator rather than a group of target species because of differences in targeting behavior on a coast-wide and temporal basis. Pacific hake was excluded when using the retained FMP groundfish denominator because vessels that target or land large amounts of this species are considered to be part of Pacific hake sectors, which are distinct from the groundfish bottom trawl sector. A complete listing of groundfish species included in the Groundfish Fishery Management Plan and used to compute and expand discard ratios is provided in Appendix A.

In all cases where a FMP groundfish species grouping was used to compute discard ratios, any retained weights that were recorded by the observer but that did not appear on fish tickets were excluded from the denominator. This was necessary to prevent double-counting associated with differences in the species codes used by observers and processors. For instance, while observers may record rockfish catch at the species level, various species of rockfish are often grouped, weighed, and recorded together on the fish ticket under a grouped species code such as NUSP - northern unspecified slope rockfish. In some cases, this difference in species coding prevents observer and fish ticket weights from matching and adjusting properly. Species coding on fish tickets varies considerably between processors and over time, and it is not possible to make assumptions regarding which individual observer-recorded species likely coincide with species grouping codes on fish tickets. Instead, by using only the retained groundfish weight from fish tickets in discard ratio denominators, we prevent double-counting of retained weights. This is not a factor when using a single species in the denominator, such as sablefish in the fixed gear fisheries (see below), as any retained weights in observer and fish ticket data that share the same species code will match and adjust properly.

Discard ratios and standard errors for the LE bottom trawl fishery are presented in Tables 2a-2b by area, season, and depth. Species were grouped according to Appendix B. Groundfish species that are currently being managed under rebuilding plans are presented separately from non-rebuilding species.

Although retained logbook weights of FMP groundfish (excluding Pacific hake) were initially used to expand observed discard ratios to the fleet-wide level in this sector, logbooks are not submitted for 100% of trawl trips and therefore do not capture all groundfish bottom trawl fishing effort. As a result, it was necessary to adjust initial fleet level discard estimates to reflect the level of effort indicated by fish ticket landings. To do this, both the fish ticket and logbook data were aggregated by state and bimonthly periods (Figure 2), which are associated with cumulative trip limits. An adjustment ratio was then computed for each state and bimonthly period as the weight of FMP groundfish (excluding Pacific hake) recorded on fish tickets divided by that recorded in logbooks. Each adjustment ratio was multiplied by coinciding discard estimates and then summed across bimonthly periods, states, and spatial-temporal strata to produce coast-wide adjusted discard estimates for each species:

$$adj(\hat{D}_s) = \sum_x \sum_a \sum_b \hat{D}_{sxab} \times \frac{F_{ab}}{R_{ab}}$$

where:

F: weight of retained FMP groundfish (excluding Pacific hake) recorded on fish tickets

$adj(\hat{D}_s)$: adjusted discard estimate for species s

Adjustment ratios were computed separately for each state and bimonthly period in order to account for differences between individual states' logbook submission rates and fish ticket recording methods. An adjustment ratio value less than 1 indicated that more FMP groundfish weight was recorded in logbooks than on fish tickets. Conversely, adjustment ratios greater than 1 occurred when fish ticket FMP groundfish weights were larger than logbook weights. In 2009, the value of the adjustment ratios computed for the LE bottom trawl sector ranged between 0.959 and 1.331, with a mean of 1.062. Only two state-bimonthly period strata had ratios less than 1, which occurred from January through February, in Washington and Oregon. The largest adjustment ratio occurred in Washington from November through December. The majority of adjustment ratios for state and bimonthly periods were slightly larger than 1.

Coast-wide landings, final discard estimates, and total fishing mortality in the 2009 LE groundfish bottom trawl sector are reported in Table 3. A 50% rate of mortality was applied to discarded sablefish and lingcod weight, as assumed by the GMT. It should also be noted that total estimated fishing mortality is now individually reported for big skate, California skate, longnose skate, and unspecified skate. In the past, a single combined estimate was provided because skates were landed as 'unspecified skate' rather than under individual species names. As such, it was not possible to accurately summarize the mortality associated with landings for individual skate species. In March 2009, a new federal sorting requirement was enacted to specify longnose skate landings (74 FR 9874). Additional state requirements ensured that skates were landed whole (with wings on), which allowed for more accurate speciation of skate landings. Estimated discard and landings for several non-groundfish species of interest as bycatch in this fishery are also reported (i.e. Dungeness crab, etc.).

California Halibut Bottom Trawl Fishery

Fleet-wide discard estimates in the California halibut bottom trawl fishery were derived from WCGOP observer data and fish ticket landings data. Although all California halibut vessels are permitted by the state of California, we considered this fishery to consist of both a limited entry and an open access component (vessels that do not have federal limited entry groundfish permits). The WCGOP provides observer coverage for both of these components. Observer data for the LE component of the California halibut fishery were collected as part of the LE groundfish bottom trawl sector. Observer data for the California halibut fishery were then subsequently isolated based on the following criteria: 1) the tow target was California halibut or 2) the tow target was nearshore mix, sand sole or other flatfish, and the tow took place in less than 30 fathoms, south of 40°10' N. latitude. All tows in the observer data that met at least one of the above requirements were included in the LE California halibut bottom trawl dataset. The WCGOP randomly samples the OA California halibut sector separately. This is described further in the WCGOP data report and summary analyses of limited entry and open access trawl vessels targeting California halibut, published in October 2010 (NWFSC 2010b). These two components of the California halibut trawl fishery remained separate in this analysis.

Discard ratios were computed for this fishery using the retained weight of California halibut in the denominator. The total landed weight of California halibut was then used as a multiplier to expand observed discard ratios to the fleet-wide level. Just as discard ratios were computed separately for the LE and OA observed components of the California halibut fishery, total fleet-wide landings had to be identified separately for each sector as well. For both the LE and OA sectors, landed California halibut weight was compiled from "non-midwater" trawl fish tickets (see Figure 1) for those vessels that had a state-issued California halibut bottom trawl permit.

Table 4 presents the total LE and OA landed weights of California halibut that were used as multipliers to expand observer discard ratios to the fleet-wide level. Also summarized in this table is the number of observed vessels, trips, and tows, as well as discard ratios. Discard ratios were calculated by dividing the observed discard weight of each species or species group by the observed retained weight of California halibut. Discard estimates were computed for each sector based on the following equation:

$$\hat{D}_s = \frac{\sum_t d_{st}}{\sum_t r_t} \times F$$

where:

- s: species or species group
- t: observed tows
- d: observed discard weight of species s
- r: observed retained weight of California halibut
- F: weight of retained California halibut recorded on fish tickets
- $\hat{D}_s$: discard estimate for species s

Any species groups used are grouped according to Appendix B. Groundfish species that are being managed under rebuilding plans are presented separately from non-rebuilding species (Table 4).

Although FMP groundfish and California halibut weights from the same fish tickets were used to adjust initial LE groundfish bottom trawl estimates and to expand discard ratios for the LE California halibut fleet, this is not anticipated to be a major source of bias in our analysis, as the primary species retained on observed California halibut tows were non-groundfish (NWFSC 2010b). However, since some flatfish species were retained on these tows, it is possible that estimates for the shallowest strata in California for the LE groundfish bottom trawl sector could have been positively biased due to slightly larger adjustment ratios (caused by the inclusion of landed flatfish weight that was in fact caught on California halibut tows). Examination of the species composition on fish tickets in the areas where California halibut is typically landed suggests that the impact of this is minor. Given that groundfish are regularly discarded by the LE California halibut fishery, we felt that it was more appropriate to estimate discard for this fishery than to exclude LE California halibut discard estimates altogether from this report.

The product of discard ratios for each species and the total fish ticket landed weight of California halibut produced expanded fleet-level discard estimates for each fishery component (LE and OA). These estimates are presented in Table 5, along with total open access landings and estimated mortalities of species caught in the 2009 California halibut trawl fishery. A 50% rate of mortality was applied for discarded lingcod, as assumed by the GMT in the limited entry bottom trawl sector. Estimated discard and landings for several non-groundfish species of interest as bycatch in this fishery are also reported (i.e. Dungeness crab, eulachon, and Pacific halibut). Since limited entry vessels participating in the California halibut fishery often land catch at the same time as catch from bottom trawl tows targeting groundfish, it was not possible to split out landed weights for groundfish species from those reported in the LE bottom trawl sector. Joint groundfish landings for the LE bottom trawl sector and for LE vessels targeting California halibut are presented in Table 3.

Pink Shrimp Trawl Fishery

Fleet-wide discard estimates for the pink shrimp trawl fishery were derived from WCGOP observer data and fish ticket landings data. Fish ticket data were assigned to this fishery using the classification system outlined in Figure 1. A summary of the observer data for the 2009 pink shrimp trawl fishery can be found in the WCGOP data report and summary analyses of open access trawl vessels targeting pink shrimp, published in October 2010 (NWFSC 2010c).

Discard ratios were computed for this fishery using the retained weight of pink shrimp in the denominator (Table 6). The total landed weight of pink shrimp was then used as a multiplier to expand observed discard ratios for this fishery to the fleet-wide level. Since observer data in 2009 were only available north of 40°10' N. latitude, only pink shrimp fish tickets in the north were compiled for the expansion. We assumed the same discard rates for all pink shrimp fleets in the north. Pink shrimp landings from south of 40°10' N. latitude are summarized as part of the remaining incidental fisheries landings in Table 18. The number of observed vessels, trips, and tows are also summarized in Table 6. Discard ratios for this fishery were calculated by dividing the observed discard weight of each species or species group by the observed retained weight of pink shrimp. The equation for the expansion of pink shrimp discard ratios is identical to that presented for the California halibut fishery, but where r represents the retained weight of pink shrimp and F represents the weight of retained pink shrimp recorded on fish tickets. Any species groups used were grouped according to Appendix B. Groundfish species that are being managed under rebuilding plans are presented separately from non-rebuilding species. Table 7 presents landings, final discard estimates, and total fishing mortality in the 2009 pink shrimp trawl fishery. Estimated discard and landings for several non-groundfish species of interest as bycatch in this fishery are also reported (i.e. Dungeness crab, eulachon, etc.).

Non-Nearshore Fixed Gear Sector

Fleet-wide discard estimates for the LE and OA non-nearshore fixed gear sector of the groundfish fishery were derived from WCGOP observer data and fish ticket landings data. A mortality rate provided by the GMT for sablefish was also employed in the analyses for this sector once discard had been estimated. Fish ticket data were assigned to this sector using the classification system outlined in Figure 1. Fish tickets for fixed gear that did not have recorded sablefish or nearshore species, were included in the non-nearshore fixed gear sector only if total groundfish landings were greater than non-groundfish landings based on a unique vessel and landing date. If non-groundfish landings were greater than groundfish landings, those fixed gear fish tickets (which also did not have recorded sablefish or nearshore species) were included in incidental landings. The commercial fixed gear fish tickets with recorded nearshore species weight were not used in this portion of the fixed gear analysis, regardless of whether they included recorded weights for sablefish. These fish tickets were instead included in the nearshore fixed gear groundfish sector (see next section).

Fish tickets were partitioned into three commercial fixed gear subsectors: LE sablefish primary, LE sablefish non-endorsed, and OA fixed-gear sablefish. Commercial fixed gear fish tickets were first divided out by whether the vessel had a federal groundfish permit (limited entry) or no federal groundfish permit (open access). OA fish tickets were placed in the OA fixed gear sablefish subsector. Next, LE fish tickets were separated based on whether the vessel's federal groundfish permit(s) had a sablefish endorsement (sablefish-endorsed) with tier quota for the primary season subsector or whether it was not endorsed (also referred to as '0' tier permits). The LE sablefish primary season takes place from April through the end of October. Fish tickets for all LE sablefish vessels with tier endorsements that were operating within this period and within their allotted tier quota were placed in the LE sablefish primary subsector. If LE sablefish-endorsed vessels fished outside of the primary season (November through March) or made trips within the season after they had reached their tier poundage, the fish tickets were placed in the sablefish non-primary subsector. In addition, fish tickets from non-endorsed LE vessels were also placed in the sablefish non-primary subsector.

The WCGOP observes the following fixed gear subsectors in order of priority: LE sablefish-endorsed primary season fixed gear, LE '0' tier (non-endorsed) and OA fixed gear (non-nearshore). LE sablefish-endorsed vessels that were fishing outside of the primary season subsector or that had reached their quota in the primary season were not observed in 2009. Data used in our analyses were collected from these three observed fisheries, and are summarized in the WCGOP data report and summary analyses of the U.S. west coast non-nearshore fixed gear fishery, published in October 2010 (NWFSC 2010d).

WCGOP observer data were stratified according to subsector, area, and gear group (where applicable) (Table 8). Records were separated into three areas; north of the groundfish management line at 40° 10' N. latitude, from 40° 10' to 36° N. latitude, and south of 36° N. latitude. Area stratification was structured in accordance with PFMC management of sablefish trip limits. Data were summarized separately for longline and pot/trap gear groups. Because logbook data are not available for the non-nearshore fixed gear sector, data associated with the depth of fishing for the entire fleet were not available. However, 2009 fishery management restricted fixed gear fishing to depths greater than 100 fathoms in the area north of 40° 10' N. latitude, with the exception of fishing greater than 125 fathoms from 45° 3.83' to 43° N. latitude, and to depths greater than 150 fathoms in the area south of 40° 10' N. latitude. These depth zones are therefore tied to area strata, but no further depth stratification of fixed-gear fishing effort is possible.

The number of observed vessels, trips, and sets are summarized for each subsector in Tables 9-11, along with the weight of sablefish and FMP groundfish (excluding Pacific hake) landings used as a measure for expanding discard from observed trips to the entire fleet. Discard ratios were calculated by area stratum, as well as by gear group when an adequate sample size was available. Any species groups used were grouped according to Appendix B. Groundfish species that are being managed under rebuilding plans are presented separately from non-rebuilding species.

In all cases where a FMP groundfish species grouping was used to compute discard ratios, any retained weights that were recorded by the observer but that did not appear on fish tickets were excluded from the denominator. This was necessary to prevent double-counting associated with differences in the species codes used by observers and processors. For instance, while observers may record rockfish catch at the species level, various species of rockfish are often grouped, weighed, and recorded together on the fish ticket by the processor under a grouped species code such as NUSP - northern unspecified slope rockfish. In some cases, this difference in species coding prevents observer and fish ticket weights from matching and adjusting properly. Species coding on fish tickets varies considerably between processors and over time, and it is not possible to make assumptions regarding which individual observer-recorded species likely coincide with species grouping codes on fish tickets. Instead, by using only the retained groundfish weight from fish tickets in discard ratio denominators, we prevent double-counting of retained weights. This is not a factor when using a single species in the denominator, such as sablefish in the area north of 36° N. latitude, as any retained weights in observer and fish ticket data that share the same species code will match and adjust properly.

Discard ratios in the two areas north of 36° N. latitude were calculated by dividing the stratum discard weight of each species by the retained catch weight of sablefish. Discard ratios for all species in the area south of 36° N. latitude were calculated by dividing the stratum discard weight of each species by the retained catch weight of all groundfish species listed in the Pacific Coast Groundfish FMP, excluding Pacific hake (Appendix B). Retained groundfish was used as the denominator in this area rather than sablefish weight alone because fixed gear fisheries south of 36° N. latitude have a wider range of target species. A broader denominator was therefore necessary in order to effectively capture their level of fishing effort.

Next, for each subsector in each area/gear stratum, the observed discard ratio (Tables 9-11) was multiplied by the fish ticket retained weight of sablefish or all FMP groundfish species (excluding Pacific hake) as indicated in Table 8. This provided an expanded fleet level discard estimate for each subsector in the stratum. If landings were made by a fixed gear subsector for which there were no or very few WCGOP observations, the most appropriate observed discard ratios were selected and applied to these landings based on similarities in the fishery management structure, fishing and discard behavior, and the gear fished. Observations in the LE sablefish primary sector were all pooled north of 36° N. latitude by individual gear type, and not divided into the small area stratum between 36° and 40° 10' N. latitude. For another example, the LE sablefish non-primary subsector landed 192 mt of sablefish north of 40° 10' N. latitude with longline gear in 2009 but only a small portion of the fleet was observed by the WCGOP program. Given similarities in gear type and catch composition, OA fixed gear data were selected as the most appropriate source of information to supplement observer data from LE non-endorsed sablefish vessels. Observer data from both sources were combined to compute a discard ratio, which was then applied to the LE sablefish non-primary longline landings in this area.

The stratum discard amounts for all subsectors were then summed for each area and totaled coast-wide. Coast-wide landings, final discard estimates, and total fishing mortality in the 2009 LE and OA non-nearshore fixed gear sector are reported in Table 12. A 20% rate of mortality is applied for discarded sablefish, as assumed by the GMT. Estimated discard and landings for several non-groundfish species of interest as bycatch in this fishery are also reported (i.e. Dungeness crab, etc.).

Nearshore Fixed Gear Sector

Fleet-wide discard estimates for the commercial nearshore fixed gear groundfish sector of the groundfish fishery were derived from WCGOP data, fish ticket landings data, and mortality rates provided by the GMT. Fish ticket data were assigned to this sector using the classification system outlined in Figure 1 and included only those fish tickets with recorded nearshore species weight. A list of nearshore species and associated species groups used in this analysis is provided in Appendix C.

The WCGOP provides coverage for the commercial nearshore fisheries in California and Oregon based on a selection process of state-issued nearshore permits/licenses. State regulations have extended the authority of the WCGOP to require observers be carried by vessels participating in these state nearshore fisheries. Summaries of observer data for the 2009 nearshore fixed gear groundfish sector are available in the WCGOP data report and summary analyses of U.S. west coast nearshore fixed gear groundfish fishery, published in October 2010 (NWFSC 2010e). Although California and Oregon nearshore fisheries are sampled separately for observer coverage, fleet-wide discard estimates are provided for the areas north and south of the groundfish management line at 40° 10' N. latitude, in accordance with 2009 federal groundfish management specifications.

The mortality rates provided by the GMT differ for each species according to depth, and it was therefore necessary to generate discard estimates in each of the three depth strata employed by the GMT. In order to compute separate estimates by depth, 2009 fleet-wide nearshore landings had to be distributed among the three depth intervals (0-10, 11-20, >20 fathoms). The percentage of catch for each species or species group by depth was calculated based on summarized observer data from 2003-2009 (Table 13). Total landings of each nearshore species or species group in 2009 were then distributed among depth intervals using the percentages computed in the previous step. For example, 5.9 mt of landed blue rockfish were observed in the commercial nearshore fishery north of 40° 10' N. latitude from 2003-2009. Of the total observed catch (landed + discarded) of blue rockfish, 23.0% were observed in 0-10 fm, 67.2% in 11-20 fm, and 9.8% in >20 fm. Using these percentages, of the 5.9 mt of blue rockfish landed north of 40° 10' N. latitude by the nearshore fleet in 2009, 1.4 mt were distributed to the 0-10 fm depth interval, 4.0 mt to the 11-20 fm interval, and 0.6 mt to the >20 fm interval. Finally, the factors used to expand observed discard were derived by summing the distributed weights of all nearshore groundfish species within each depth stratum.

Prior to the calculation of discard ratios in this sector, WCGOP observer data were stratified by area and depth (Table 14). Area stratification was structured in accordance with federal groundfish management and depth stratification (0-10, 11-20, >20 fathoms) was structured in accordance with mortality rates provided by the GMT. In both areas, data were combined in the two deepest depth strata (11-20 and >20 fathoms) to ensure an adequate sample size. The number of observed nearshore fixed gear vessels, trips, and sets are summarized in Table 14. Discard ratios were calculated by dividing the stratum discard weight of each species or species group by the retained weight of nearshore species. All species groups used in reporting nearshore results reflect the species assignments in Appendix B. Groundfish species that are being managed under rebuilding plans are presented separately from non-rebuilding species.

Observed discard ratios (Table 14) were multiplied by the retained weight of all nearshore groundfish species within each depth stratum (Table 13). These fleet-level estimates of gross discard within each stratum were then multiplied by depth-specific discard mortality rates (provided by the GMT) to estimate the amounts of discard mortality in each stratum (Table 15a-b). In December 2007, the GMT provided a slightly revised suite of depth-specific discard survival assumptions for nearshore species. Final discard estimates for each area were obtained by summing amounts of discard mortality across depth strata. Gross discard estimates, discard mortality rates, estimated discard mortality, and total fishing mortality in the 2009 nearshore fixed gear sectors north and south of 40° 10' N. latitude are reported in Tables 15a-15b. Estimated discard and landings for several non-groundfish species of interest as bycatch in this fishery are also reported (Dungeness crab, California sheephead, etc.).

Discard Estimation Summary

The estimated fishing mortalities of major U.S. west coast groundfish species are reported by sector/fishery in Table 16. This table includes only the sectors/fisheries for which WCGOP observer data were available and for which discard estimation analyses were conducted by the authors of this report. These include the following fisheries: LE bottom trawl, California halibut trawl, pink shrimp trawl (north of 40° 10' N latitude), non-nearshore fixed gear (LE primary, LE non-primary, OA fixed gear), and nearshore fixed gear (Oregon and California). Major U.S. west coast groundfish species are presented by specific area or species group to be consistent with ABC and OY guidelines.

Discard estimation and summaries for several additional non-groundfish species observed by the WCGOP are available in separate reports; Pacific halibut is provided in Heery et al. 2010, salmon species are provided in Bellman et al. 2010a, and green sturgeon is provided in Bellman et al. 2010b.

Other Commercial Data Summaries

The midwater trawl fishery for Pacific hake/whiting is comprised of several at-sea processing fleets. The three at-sea processing sectors include: catcher-processors, motherships (with non-tribal catcher boats), and a tribal fleet delivering to motherships. Observer data were obtained from the At-Sea Hake Observer Program (ASHOP), which observes all of these at-sea sectors. The objective of observation in this program is to produce estimates of total catch in the fishery. Observers do not estimate or report amounts of discard separately. However, they provide visual estimates of the proportions of catch that are discarded. These proportions form the basis of the retained and discarded catch amounts summarized in Table 17. Fishing mortalities from all at-sea sectors of the Pacific hake fisheries are summarized in Table 19 as 'All at-sea hake fisheries'. The summary of this fishery is based exclusively on A-SHOP observer data.

In addition, there is also a Pacific hake fleet which delivers to shoreside processors. The shoreside fishery has been conducted under an Exempted Fishing Permit (EFP). Under this EFP, participants place all of their catch directly into refrigerated tanks, rather than sorting the catch on deck, in order to preserve fish quality. They are allowed to avoid penalties for catch weights which go over their allotted trip-limits at the time of landing. This is described as a "maximum" retention fishery. Summaries of catch in the shoreside hake midwater trawl fleet are included in Table 17. The summary is also included in Table 19 as 'Shoreside hake mid-water trawl'.
The summary of this fishery is based exclusively on fish ticket data assigned to this fishery using the classification system outlined in Figure 1, and then combining any commercial trawl midwater gear and any EFP midwater trawl gear fish tickets.

Landings of groundfish species from the WA tribal shoreside fisheries, which may directly target Pacific hake or other groundfish, are summarized in Table 19. The summary of this fishery is based exclusively on fish ticket data assigned to this fishery using the classification system outlined in Figure 1. Landings of several non-groundfish species of interest are also included. Discard estimates for WA tribal shoreside fisheries were not provided.

Total catch of groundfish species from the recreational fisheries are summarized in Table 19. The summary of these fisheries is based exclusively on data provided by the state agencies: the Washington Department of Fish and Wildlife, the Oregon Department of Fish and Wildlife, and the California Department of Fish and Game. Several non-groundfish species of interest are also included if data were provided.

Research catch of groundfish species is summarized in Table 19, based on data provided by the NOAA Northwest Regional Office. Total catch weight (discarded + retained) was summarized from reporting based on scientific research permits that directly or indirectly caught groundfish off the U.S. west coast.

Landings of groundfish species from other non-groundfish fisheries operating under federal open access landing limits, which are mostly state-managed and incidentally catch groundfish, are also summarized in Table 19 as 'Remaining incidental fisheries'. The fisheries included in this summary are listed in the Introduction section. A more detailed breakdown of incidental landings is provided in Table 18. The summary of these fisheries was based exclusively on fish ticket data assigned to each fishery using the classification system outlined in Figure 1. It was not possible to provide discard estimates for the remaining incidental fisheries.

In Table 20, total fishing mortality estimates are evaluated in terms of 2009 OY and ABC harvest specifications from federal groundfish regulations (50 CFR 660 Subpart G). Major U.S. west coast groundfish species are summarized by area or species group to be consistent with ABC and OY harvest specifications.

Results

The primary objective of this report is to determine total annual fishing mortality in the 2009 U.S. west coast groundfish fishery to evaluate the status of groundfish species in terms of ABC and OY harvest specifications. Table 20 provides the basis for these determinations.

The results of this analysis indicate that only one of the rebuilding groundfish species exceeded OY in 2009 (Table 20). However, the ABCs for rebuilding groundfish species were not exceeded in 2009. OY specifications for rebuilding species in 2009 relative to 2008 increased except for darkblotched and yelloweye rockfish (74 FR 9874). The darkblotched rockfish OY decreased by 45 mt and the yelloweye rockfish OY decreased by 3 mt relative to 2008. However, total mortality of darkblotched rockfish increased in 2009 relative to 2008 (301 mt in 2009; 253 mt at 77% of OY in 2008), and exceeded the 2009 OY (285 mt) by 6% (Bellman et al. 2009). However, the 2009 darkblotched rockfish ABC (437 mt) was not exceeded. The highest prior proportion of darkblotched rockfish total mortality in relation to OY occurred in 2007 at 98% (Bellman et al. 2008). One potential source of darkblotched rockfish mortality not accounted for in our total mortality reports is catch discarded at-sea in the shoreside hake fishery (http://www.nwr.noaa.gov/Groundfish-Halibut/Groundfish-Fishery-Management/Whiting-Management/2009/index.cfm).

Total mortality estimates of darkblotched rockfish and Pacific Ocean Perch were highest in the LE bottom trawl sector (Table 19). Total mortality of canary rockfish in 2009 was the lowest value (38 mt) and lowest proportion of OY (36%; Table 20) for this species since estimates began in 2005. In addition, the 2009 canary rockfish OY and ABC were higher than any values set for this species since 2005.

Among other rebuilding species, the largest percentage of estimated mortality in relation to OY was 96% for Pacific ocean perch, with an estimated total fishing mortality of 181 mt and an OY of 189 mt in 2009. In 2008, Pacific ocean perch total mortality was at 87% of the 150 mt OY. In 2007, Pacific ocean perch mortality was estimated to exceed the same OY by approximately 7 mt (4%) (Bellman et al. 2008). Pacific ocean perch is managed under the slope rockfish category when caught south of 40° 10' N. latitude, so species-specific estimates are reported only in the area north of this line. Thus, additional mortality of Pacific ocean perch at the population level can occur south of 40° 10' N. latitude, but it is not evaluated in groundfish management on an individual species-specific basis.

For other groundfish, only the total mortality estimate for longnose skate (1455 mt) was above the OY (1,349 mt) by 8%. This was still within the ABC harvest management goal of 3,428 mt (Table 20). Longnose skate was fully assessed in 2006 and an assessment update was completed in 2007. Total mortality of longnose skate was highest in the LE bottom trawl sector, followed by non-nearshore fixed gear sectors (Table 19).

Prior to 2009, longnose skate was managed as part of the 'Other Fish' complex and were recorded in previous total mortality reports under "skates." In March 2009, a new federal sorting requirement was enacted which requires longnose skates to be sorted and recorded as an individual species on landing receipts (74 FR 9874). Additional state requirements ensured that skates were landed whole (with wings on), which allowed for more accurate speciation of skate landings. Since sorting requirements for longnose skate did not begin until March 2009, the total mortality value presented here is likely an underestimate.

Fishing mortality values for three additional groundfish species were estimated to be within 10% of their OYs (Table 20). These were shortspine thornyhead (north of 34° 27' N. latitude) (97% of OY), sablefish (north of 36° N. latitude) (94% of OY), and Pacific hake (90% of OY). Petrale sole total mortality decreased from the prior year (1978 mt; 2260 in 2008) to 81% of its OY in 2009. Pacific hake total mortality also decreased from the prior year (122165 mt; 250,205 mt in 2008), and had lower OY and ABC guidelines in 2009.

It should be noted that several sources of uncertainty were not accounted for in this analysis and may influence total mortality estimates. These include uncertainty in sampling of landings for species composition, logbook spatial and depth information, observed retained weights, discard mortality rates, as well as others. Currently, it is not possible to quantify uncertainty for total mortality estimates presented in this report, as measures of the variability associated with various data source are not available. As with all point estimates, total mortality values presented in Tables 19 and 20 should be considered with caution.

Summary and Conclusions

In this analysis, total mortality estimates were derived for the 2009 U.S. west coast groundfish fishery. These estimates were then compared with OY and ABC harvest management goals (Table 20) in order to determine whether overfishing was occurring for west coast groundfish species.

- Total estimated mortality for darkblotched rockfish exceeded the 2009 OY specification by 6% (301 mt versus OY of 285 mt). The darkblotched rockfish 2009 ABC (437 mt) was not exceeded.

- Total estimated mortality for longnose skate exceeded the 2009 OY specification by 8% (1455 mt versus OY of 1349 mt). The longnose skate 2009 ABC (3428 mt) was not exceeded. This was the first year that longnose skate was evaluated individually, as in prior years it was managed under the 'Other Fish' complex. Sorting requirements for longnose skate began in March 2009 thus the total mortality value presented here is likely an underestimate.

- Three additional groundfish species were estimated to be within 10% of their OYs; shortspine thornyhead (north of 34° 27' N. latitude) (97% of OY), sablefish (north of 36° N. latitude) (94% of OY), and Pacific hake (90% of OY).

- Although the total mortality estimate for petrale sole decreased, it remained within 20% of the 2009 OY guideline, at 81%.

- Total estimated mortality of canary rockfish in 2009 was the lowest value (38 mt) and lowest proportion of OY (36%) since estimates for this species began in 2005.

- Of the 75 groundfish species or species groups for which total fishing mortality estimates are calculated, the majority (72%) of total mortality estimates increased from 2008 to 2009.

- Twenty-six groundfish species or species groups (65%) had total fishing mortality estimates which were less than 50% of 2009 OY harvest specifications.

Acknowledgements

The authors gratefully acknowledge the hard work and dedication of the observers from the West Coast Groundfish and At-Sea Hake Observer Programs, contributions from all the staff of the West Coast Groundfish Observer Program, as well as Vanessa Tuttle of the At-Sea Hake Observer Program, in the development of this report. Heather Reed (WDFW), Linda ZumBrunnen and Lynn Mattes (ODFW), and Jayna A. Schaaf-Da Silva (CDFG) provided recreational catch amounts on behalf of Washington, Oregon, and California. Gretchen Arentzen provided summarized research catch from the NOAA NWR. John Devore and Kelly Ames provided discard mortality rates on behalf of the GMT and Jason Cope facilitated communications with the GMT as a whole.

References

Alaska Fisheries Science Center (AFSC). 2009. Observer Sampling Manual. Fisheries Monitoring and Analysis Division, North Pacific Groundfish Observer Program. Alaska Fisheries Science Center, 7600 Sand Point Way NE, Seattle, WA. Available at http://www.afsc.noaa.gov/FMA/document.htm

Bellman, M. A. and E. Heery. In Preparation. Discarding and Total Fishing Mortality in the U.S. Pacific Groundfish Demersal Trawl Fishery.

Bellman, M., E. Heery, and J. Hastie. 2008. Estimated Discard and Total Catch of Selected Groundfish Species in the 2007 U.S. West Coast Fisheries. Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/ divisions/fram/observer/datareport/ docs/TotalMortality_update2007.pdf.

Bellman, M.A., E. Heery, and J. Majewski. 2009. Estimated Discard and Total Catch of Selected Groundfish Species in the 2008 U.S. West Coast Fisheries. West Coast Groundfish Observer Program. Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/ research/divisions/fram/observer/datareport/docs/total_mortality_2008_0310-revision.pdf

Bellman, M.A., E. Heery, and J. Majewski. 2010a. Observed and Estimated Total Bycatch of Salmon in the 2008 U.S. West Coast Groundfish Fisheries. West Coast Groundfish Observer Program. Northwest Fisheries Science Center, 2725 Montlake Blvd E., Seattle, WA 98112. Available at http://www.nwfsc.noaa.gov/ research/divisions/fram/observer/datareport/docs/salmon_mortality_2008.pdf

Bellman, M.A., E. Heery, and J. Majewski. 2010b. Observed and Estimated Total Bycatch of Green Sturgeon in the 2002-2008 U.S. West Coast Groundfish Fisheries. West Coast Groundfish Observer Program. Northwest Fisheries Science Center, 2725 Montlake Blvd E., Seattle, WA 98112. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/ GreenSturgeon_TM0208Rpt_012910rv.pdf

Hastie, J, and M.A. Bellman. 2007. Estimated Discard and Total Catch of Selected Groundfish Species. Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/documents/totalmortality2006_final.pdf

Heery, E., M.A Bellman, and J. Majewski. 2010. Pacific Halibut Bycatch in the U.S. West Coast Groundfish Fishery from 2002 through 2009. West Coast Groundfish Observer Program. Northwest Fisheries Science Center, 2725 Montlake Blvd E., Seattle, WA 98112.

Northwest Fisheries Science Center (NWFSC). 2006. Observer coverage plan: Sampling plan and logistics for the west coast groundfish observer program. NOAA, West Coast Groundfish Observer Program. Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/observersampling plan.pdf

Northwest Fisheries Science Center (NWFSC). 2009. West coast groundfish observer training manual. West Coast Groundfish Observer Program. National Marine Fisheries Service, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/observermanual/observermanual.cfm.

Northwest Fisheries Science Center (NWFSC). 2010a. Data Report and Summary Analyses of the U.S. West Coast Limited Entry Groundfish Bottom Trawl Fishery. West Coast Groundfish Observer Program. National Marine Fisheries Service, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/trawl_report_2009_final.pdf

Northwest Fisheries Science Center (NWFSC). 2010b. Data Report and Summary Analyses of the U.S. West Coast California Halibut Trawl Fishery. West Coast Groundfish Observer Program. National Marine Fisheries Service, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/chlbtwl_report_2009_final.pdf

Northwest Fisheries Science Center (NWFSC). 2010c. Data Report and Summary Analyses of the California and Oregon Pink Shrimp Trawl Fisheries. West Coast Groundfish Observer Program. National Marine Fisheries Service, Northwest Fisheries Science Center, 2725 Montlake Blvd E., Seattle, WA 98112 Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/shrimp_twl_report_2009_final.pdf.

Northwest Fisheries Science Center (NWFSC). 2010d. Data Report and Summary Analyses of the U.S. West Coast Non-Nearshore Fixed Gear Groundfish Fishery. National Marine Fisheries Service, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/fixedgear_report_2009_final.pdf

Northwest Fisheries Science Center (NWFSC). 2010e. Data Report and Summary Analyses of the U.S. West Coast Nearshore Fixed Gear Groundfish Fishery. West Coast Groundfish Observer Program. National Marine Fisheries Service, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/

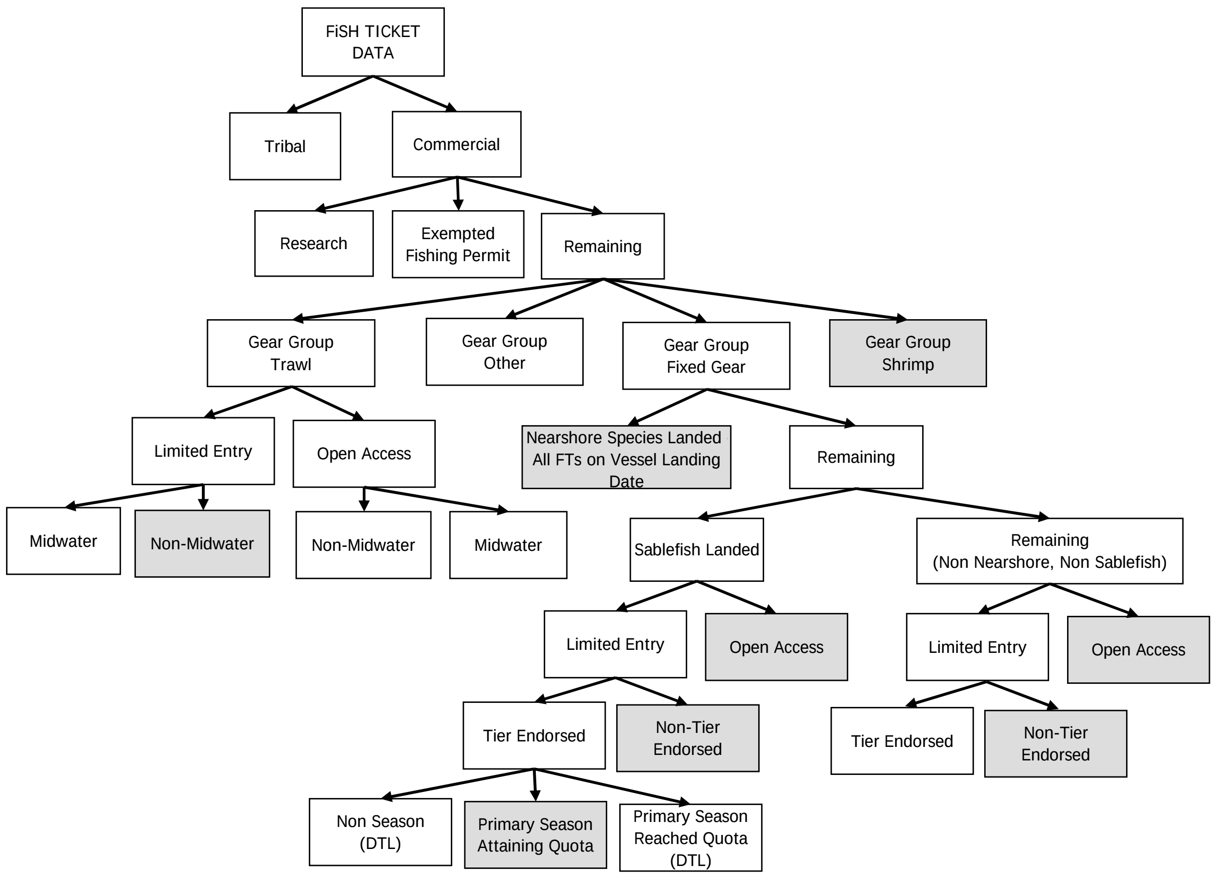
nearshore_fg_report_2009_final.pdf

Pacific Fishery Management Council (PFMC). 2008. Pacific Coast Groundfish Fishery Management Plan for the California, Oregon, and Washington Groundfish Fishery as Amended through Amendment 19. PFMC, 7700 NE Ambassador Place, Suite 100, Portland, OR. Available at: http://www.pcouncil.org/wp-content/uploads/fmpthru19.pdf

Figures

Figure 1. Fish ticket and logbook data processing for division into groundfish fishery sectors after retrieval of a full calendar year data set from the Pacific Coast Fisheries Information Network (PacFIN) database. Grey highlight indicates sectors for which federal observer data is available.

Fish Ticket Processing



Logbook Processing

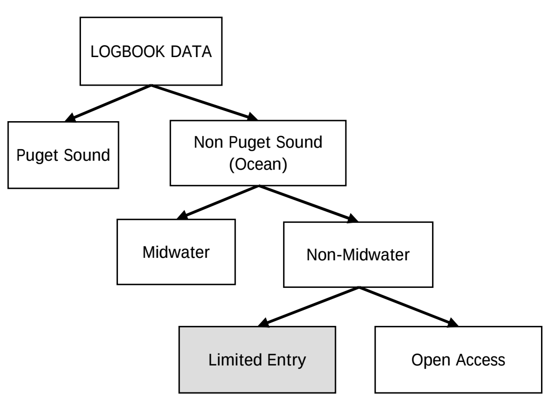
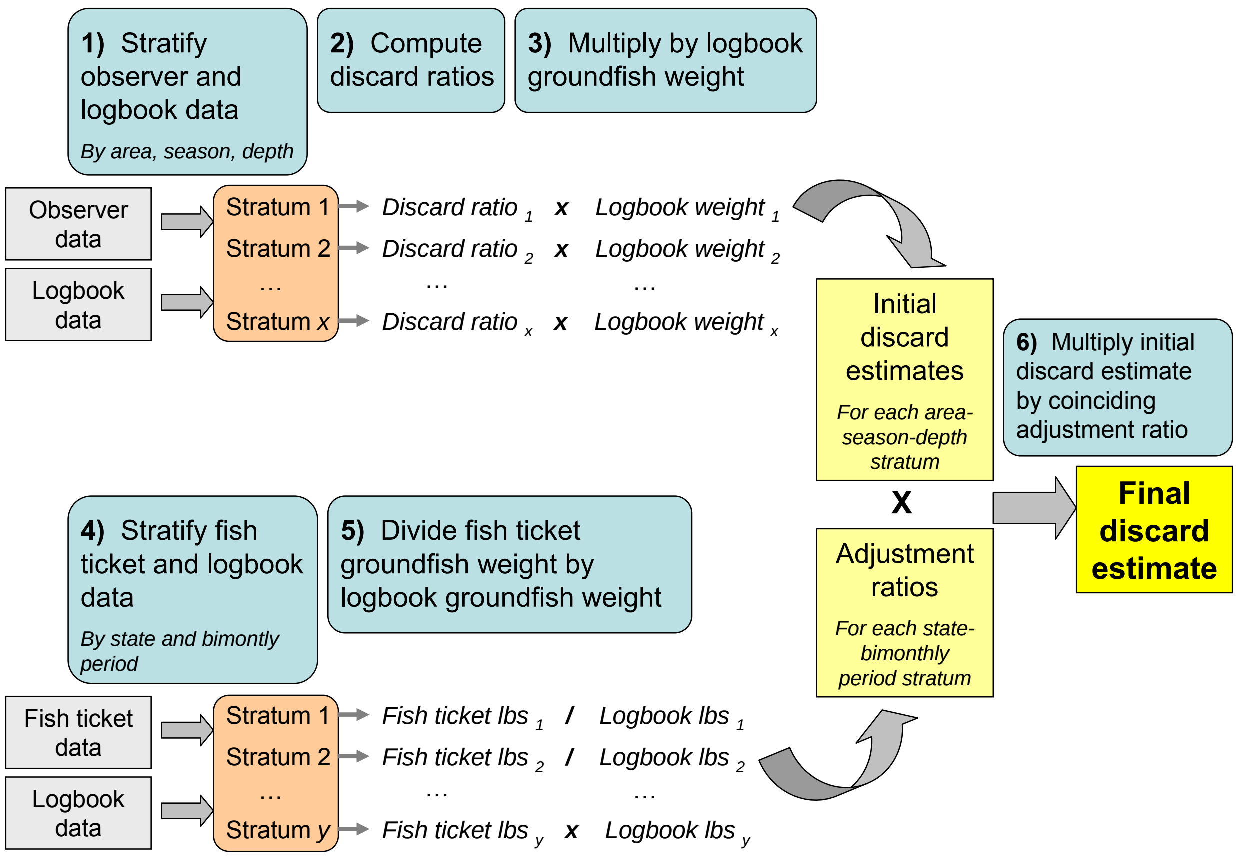


Figure 2. Flow chart illustrating the process by which WCGOP observer data from the limited entry bottom trawl sector are expanded to the fleet-wide level. Retained weights in the observer data are adjusted based on coinciding fish ticket weights for each observed trip. Observer data are then assigned to spatial/temporal strata based on latitude, depth, and season. Observed discard ratios are then computed and applied to the coinciding logbook weight for each stratum. Finally, an adjustment ratio of the proportion of logbook groundfish weight to fish ticket groundfish weight is multiplied by the initial expanded estimate to produce a final discard mortality estimate for each species. See the limited entry bottom trawl section in the methods for further details.



Tables

Note: In all tables, (--) was used when there is no actual numeric value (i.e. the species was neither caught nor discarded). Values appear as 0.0 when a value exists but is smaller than the decimal places allotted. A value of NA represents that the calculation is not applicable for a particular species or strata, or that the calculation did not produce a result (e.g. very small values might result in NA from a standard error calculation).

Table 1. Number of tows and retained weight (mt) of FMP groundfish species (excluding Pacific hake) from observer and logbook data for the 2009 limited entry bottom trawl fishery by management area, depth, and season. Data are combined across depth categories as needed to ensure adequate sample size. Tows targeting California halibut have been removed from both observer and logbook data. Winter season is January-April and November-December and summer season is May-October.

Depth interval (fathoms)	NORTH of 40°10' N Lat.				SOUTH of 40°10' N Lat.			
	Number of tows		Retained groundfish (mt)		Number of tows		Retained groundfish (mt)	
	Winter	Summer	Winter	Summer	Winter	Summer	Winter	Summer
Observed fleet								
0-125	96	1011	49.4	725.0	72	156	71.5	78.8
126-250	528	463	1049.0	770.0		105		142.0
> 250	1003	713	1791.5	1040.8	114	120	155.4	171.6
Total	1627	2187	2889.9	2535.8	186	381	226.8	392.4
All trawl logbooks								
0-125	427	3808	165.3	2742.1	587	629	529.3	174.6
126-250	2294	2334	4600.9	4022.5		381		442.5
> 250	3794	3168	6868.6	4385.9	442	538	584.6	767.8
Total	6515	9310	11634.7	11150.5	1029	1548	1113.9	1384.9
Percentage observed								
0-125	22%	27%	30%	26%	12%	25%	13%	45%
126-250	23%	20%	23%	19%		28%		32%
> 250	26%	23%	26%	24%	26%	22%	27%	22%
Total	25%	23%	25%	23%	18%	25%	20%	28%

Table 2a. Discard ratios and standard errors from observed trips north of 40°10' N. latitude in the 2009 limited entry bottom trawl fishery by season and depth. Ratios are computed as the observed discard weight divided by the observed weight (adjusted to fish tickets) of retained FMP groundfish species (excluding Pacific hake). Winter season is January-April and November-December and summer season is May-October. Species are grouped according to Appendix B.

NORTH OF 40°10' N Lat.		Depth interval (fathoms)					
		0-125		126-250		≥ 250	
		Discard ratio	SE	Discard ratio	SE	Discard ratio	SE
Rebuilding species	**Season**	***Denominator = Retained groundfish (mt)***					
Bocaccio	winter	0.0000	NA	--	NA	--	NA
	summer	0.0000	NA	--	NA	--	NA
Canary rockfish	winter	0.0012	0.0254	0.0000	0.0156	0.0000	NA
	summer	0.0020	0.0500	--	NA	--	NA
Darkblotched rockfish	winter	0.0005	0.0284	0.0140	0.0565	0.0006	0.0052
	summer	0.0034	0.0411	0.0150	0.1299	0.0002	0.0034
Pacific ocean perch	winter	0.0000	0.0066	0.0126	0.1310	0.0014	0.0693
	summer	0.0003	0.0361	0.0027	0.0264	0.0004	0.0103
Widow rockfish	winter	0.0014	0.9943	0.0023	0.2203	0.0000	0.0022
	summer	0.0002	0.0403	0.0003	0.1124	0.0000	0.0011
Yelloweye rockfish	winter	--	NA	--	NA	--	NA
	summer	0.0000	0.0311	--	NA	--	NA
Non-rebuilding species		***Denominator = Retained groundfish (mt)***					
Arrowtooth flounder	winter	0.0646	0.3403	0.0449	0.1788	0.0131	0.0893
	summer	0.2912	1.0454	0.0405	0.1739	0.0407	0.2415
Big skate	winter	0.0330	0.1783	0.0000	0.0352	0.0000	0.0197
	summer	0.0223	0.1360	0.0000	0.0223	0.0001	0.1817
Black rockfish (North of 46°16' N. lat.)	winter	--	NA	--	NA	--	NA
	summer	0.0000	0.0483	--	NA	--	NA
Black rockfish (South of 46°16' N. lat.)	winter	--	NA	0.0000	NA	--	NA
	summer	0.0000	NA	0.0000	NA	--	NA
Cabezon (Oregon)	winter	--	NA	--	NA	--	NA
	summer	0.0000	0.0076	0.0000	NA	--	NA
California skate	winter	--	NA	--	NA	0.0000	0.0346
	summer	0.0001	0.1368	--	NA	--	NA
Chilipepper rockfish	winter	--	NA	0.0001	0.1184	--	NA
	summer	0.0004	0.4066	--	NA	--	NA
Dover sole	winter	0.0079	0.0483	0.0153	0.0950	0.0257	0.0703
	summer	0.0440	0.1203	0.0069	0.0418	0.0287	0.0821
English sole	winter	0.0627	0.1444	0.0007	0.0138	0.0000	0.0013
	summer	0.0413	0.0833	0.0001	0.0031	--	NA
Greenspotted rockfish	winter	--	NA	--	NA	--	NA
	summer	0.0000	0.0180	--	NA	--	NA
Greenstriped rockfish	winter	0.0007	0.1125	0.0001	0.0426	0.0000	0.0021
	summer	0.0047	0.0595	0.0001	0.0726	0.0000	0.2937
Grenadiers	winter	--	NA	0.0000	0.0006	0.0041	0.0309
	summer	--	NA	0.0000	0.0029	0.0142	0.1057
Kelp greenling	winter	--	NA	--	NA	0.0000	NA
	summer	0.0000	0.0134	--	NA	--	NA
Lingcod (Washington/Oregon)	winter	0.0211	0.1613	0.0007	0.0199	0.0001	0.0062
	summer	0.0332	0.1057	0.0001	0.0111	0.0000	0.0000
Lingcod (California)	winter	--	NA	0.0000	0.0040	0.0000	0.0239
	summer	0.0001	0.0111	--	NA	--	NA
Longnose skate	winter	0.0825	0.3521	0.0154	0.0356	0.0059	0.0194
	summer	0.0426	0.0730	0.0156	0.0430	0.0047	0.0157
Longspine thornyhead	winter	0.0000	NA	0.0010	0.0105	0.0284	0.0465
	summer	--	NA	0.0018	0.0070	0.0387	0.0653
Mixed thornyheads	winter	--	NA	0.0001	0.0210	0.0030	0.2811
	summer	--	NA	0.0002	0.2667	0.0049	0.9277

Table 2a (continued).

NORTH OF 40°10' N Lat.		Depth interval (fathoms)					
		0-125		126-250		≥ 250	
		Discard ratio	SE	Discard ratio	SE	Discard ratio	SE
Non-rebuilding species (cont.)	**Season**	***Denominator = Retained groundfish (mt)***					
Other flatfish	winter	0.1984	0.2580	0.0027	0.0156	0.0005	0.0032
	summer	0.1652	0.0998	0.0027	0.0248	0.0006	0.0026
Other groundfish	winter	0.0207	0.1090	0.0053	0.0315	0.0009	0.0099
	summer	0.0237	0.0505	0.0049	0.0287	0.0022	0.0214
Other nearshore rockfish	winter	--	NA	--	NA	--	NA
	summer	0.0000	0.0244	--	NA	--	NA
Other shelf rockfish	winter	0.0000	0.0029	0.0013	0.0492	0.0000	0.0014
	summer	0.0021	0.0919	0.0004	0.0083	0.0000	0.0019
Other slope rockfish	winter	0.0000	0.0073	0.0075	0.0172	0.0016	0.0114
	summer	0.0003	0.0145	0.0258	0.1240	0.0015	0.0053
Pacific cod (North of 43° N. lat.)	winter	0.0005	0.0046	0.0000	0.0008	--	NA
	summer	0.0019	0.0340	--	NA	--	NA
Pacific hake	winter	0.0043	0.1956	0.0264	0.0872	0.0174	0.0742
	summer	0.0566	0.7867	0.0582	0.1808	0.0360	0.1261
Petrale sole	winter	0.0214	0.0568	0.0057	0.0909	0.0031	0.1620
	summer	0.0530	0.0896	0.0000	0.0016	--	NA
Redstripe rockfish	winter	--	NA	0.0001	0.0353	0.0000	NA
	summer	0.0001	0.1111	0.0000	0.0070	--	NA
Sablefish (North of 36° N. lat.)	winter	0.0625	0.8172	0.0109	0.0413	0.0088	0.0192
	summer	0.0521	0.1394	0.0020	0.0085	0.0062	0.0420
Sharpchin rockfish	winter	0.0000	NA	0.0007	0.0970	0.0000	0.0104
	summer	0.0006	0.1607	0.0003	0.0613	0.0000	0.0212
Shortspine thornyhead	winter	0.0003	0.3456	0.0033	0.0089	0.0023	0.0052
	summer	0.0004	0.0116	0.0168	0.0273	0.0061	0.0134
Silvergray rockfish	winter	--	NA	0.0000	0.0106	0.0000	NA
	summer	0.0000	0.1898	0.0000	NA	--	NA
Spiny dogfish	winter	0.2102	1.1186	0.0572	0.1848	0.0073	0.0771
	summer	0.0365	0.3864	0.0077	0.0490	0.0034	0.0826
Splitnose rockfish	winter	0.0001	0.0071	0.0080	0.0471	0.0007	0.0422
	summer	0.0003	0.0611	0.0078	0.0675	0.0005	0.0223
Starry flounder	winter	0.0000	0.0044	--	NA	--	NA
	summer	0.0008	0.0130	--	NA	--	NA
Unspecified skate	winter	--	NA	0.0001	0.0018	0.0001	0.0023
	summer	0.0006	0.0114	0.0003	0.0050	0.0001	0.0015
Yellowmouth rockfish	winter	--	NA	0.0000	0.0264	0.0000	NA
	summer	--	NA	0.0000	NA	--	NA
Yellowtail rockfish	winter	0.0044	0.0782	0.0000	0.0014	--	NA
	summer	0.0032	0.0585	--	NA	--	NA
Non-groundfish species		***Denominator = Retained groundfish (mt)***					
California halibut	winter	--	NA	0.0000	NA	--	NA
	summer	--	NA	--	NA	--	NA
Dungeness crab	winter	0.0872	0.3366	0.0002	0.0274	0.0000	0.0153
	summer	0.0521	0.1211	0.0001	0.0159	--	NA
Eulachon	winter	--	NA	--	NA	--	NA
	summer	0.0000	0.0086	--	NA	--	NA
Other non-FMP flatfish	winter	0.0010	0.0208	0.0005	0.0100	0.0021	0.0055
	summer	0.0109	0.0462	0.0003	0.0031	0.0027	0.0071
Other non-FMP skate	winter	0.0190	0.1731	0.0054	0.0114	0.0045	0.0084
	summer	0.0036	0.0211	0.0063	0.0169	0.0044	0.0102
Other nongroundfish	winter	0.0533	0.1269	0.0437	0.0372	0.0249	0.0095
	summer	0.0448	0.0514	0.0259	0.0181	0.0498	0.0218
Tanner crab	winter	0.0001	NA	0.0020	0.0234	0.0343	0.0514
	summer	0.0000	0.2066	0.0015	0.0085	0.0341	0.0580

Table 2b. Discard ratios and standard errors from observed trips south of 40˚10' N. latitude in the 2009 limited entry bottom trawl fishery by season and depth. Ratios are computed as the observed discard weight divided by the observed weight (adjusted to fish tickets) of retained FMP groundfish species (excluding Pacific hake). Winter season is January-April and November-December and summer season is May-October. Species are grouped according to Appendix B. **Columns with darker shading signify that data were combined across more than one depth interval.**

SOUTH OF 40°10' N Lat.		**Depth interval (fathoms)**					
		0-125		**126-250**		**≥ 250**	
		Discard ratio	SE	Discard ratio	SE	Discard ratio	SE
Rebuilding species	**Season**	***Denominator = Retained groundfish (mt)***					
Bocaccio	winter			0.0065	0.1814	--	NA
	summer	0.0214	0.3667	0.0169	0.4003	0.0013	0.4332
Canary rockfish	winter			0.0000	0.0102	--	NA
	summer	0.0000	0.0022	0.0001	0.0567	--	NA
Cowcod	winter			0.0001	0.0068	--	NA
	summer	0.0001	0.0222	0.0008	0.0891	--	NA
Darkblotched rockfish	winter			0.0001	0.0021	--	NA
	summer	0.0000	0.0034	0.0003	0.0039	0.0001	0.0286
Widow rockfish	winter			0.0026	0.1312	--	NA
	summer	0.0011	0.1091	0.0213	0.8870	--	NA
Yelloweye rockfish	winter			--	NA	--	NA
	summer	0.0000	NA	--	NA	--	NA
Non-rebuilding species		***Denominator = Retained groundfish (mt)***					
Arrowtooth flounder	winter			0.0099	0.2492	0.0011	0.0546
	summer	0.0011	0.0223	0.0111	0.0871	0.0028	0.1031
Bank rockfish	winter			0.0000	0.0006	--	NA
	summer	--	NA	0.0001	0.0052	0.0000	0.0007
Big skate	winter			--	NA	--	NA
	summer	0.0150	0.2924	--	NA	--	NA
Black rockfish	winter			--	NA	--	NA
	summer	--	NA	--	NA	--	NA
Blackgill rockfish	winter			0.0001	0.0022	0.0000	0.0019
	summer	--	NA	0.0001	0.0026	0.0001	0.0043
California skate	winter			0.0012	0.0600	--	NA
	summer	0.0117	0.0698	--	NA	0.0001	NA
Chilipepper rockfish	winter			0.0093	0.1189	--	NA
	summer	0.1164	1.0185	0.0863	1.5888	0.0000	0.0250
Dover sole	winter			0.0260	0.1850	0.1082	0.3551
	summer	0.0106	0.0822	0.0446	0.3340	0.1295	0.3335
English sole	winter			0.0048	0.0311	--	NA
	summer	0.0287	0.0510	0.0034	0.0355	0.0000	0.0033
Greenspotted rockfish	winter			--	NA	--	NA
	summer	0.0002	0.0269	0.0000	0.0109	--	NA
Greenstriped rockfish	winter			0.0006	0.0468	--	NA
	summer	0.0045	0.1120	0.0001	0.0097	--	NA
Grenadiers	winter			--	NA	0.0142	0.1035
	summer	--	NA	0.0001	0.0030	0.0116	0.0740
Kelp greenling	winter			--	NA	--	NA
	summer	0.0000	NA	--	NA	--	NA
Lingcod	winter			0.0001	0.0025	--	NA
	summer	0.0769	0.4889	0.0002	0.0036	--	NA
Longnose skate	winter			0.0703	0.3365	0.0490	0.2575
	summer	0.0917	0.2213	0.0560	0.2173	0.0638	0.2595
Longspine thornyhead	winter			0.0000	0.0045	0.0426	0.0875
	summer	--	NA	0.0003	0.0059	0.0365	0.0867
Mixed thornyheads	winter			--	NA	0.0021	0.6148
	summer	--	NA	--	NA	0.0001	NA

Table 2b (continued).

SOUTH OF 40°10' N Lat.		Depth interval (fathoms)					
		0-125		126-250		≥ 250	
		Discard ratio	SE	Discard ratio	SE	Discard ratio	SE
Non-rebuilding species (cont.)	**Season**	***Denominator = Retained groundfish (mt)***					
Other flatfish	winter			0.0075	0.0400	0.0001	0.0023
	summer	0.1786	0.2043	0.0124	0.0653	0.0007	0.0101
Other groundfish	winter			0.0131	0.1033	0.0054	0.0347
	summer	0.0256	0.1203	0.0250	0.0955	0.0047	0.0314
Other nearshore rockfish	winter			--	NA	--	NA
	summer	--	NA	--	NA	--	NA
Other shelf rockfish	winter			0.0085	0.0847	--	NA
	summer	0.0015	0.0413	0.0111	0.1334	0.0008	0.9900
Other slope rockfish	winter			0.0126	0.1702	0.0018	0.0145
	summer	0.0000	0.0019	0.0033	0.0181	0.0013	0.0072
Pacific hake	winter			0.0690	0.4149	0.0535	0.3114
	summer	0.0896	1.8654	0.0442	0.2001	0.0197	0.1420
Petrale sole	winter			0.0097	0.0957	0.0001	0.0267
	summer	0.0115	0.0262	0.0009	0.0206	0.0000	0.0031
Sablefish (North of 36° N. lat.)	winter			0.0028	0.0305	0.0093	0.0489
	summer	0.0207	0.1826	0.0034	0.0172	0.0005	0.0031
Sablefish (South of 36° N. lat.)	winter			--	NA	0.0001	0.0163
	summer	--	NA	--	NA	--	NA
Sharpchin rockfish	winter			0.0034	0.2834	--	NA
	summer	0.0078	2.0089	0.0030	0.3040	--	NA
Shortbelly rockfish	winter			0.0027	0.5671	--	NA
	summer	0.0000	0.0274	0.0125	0.7910	0.0008	NA
Shortspine thornyhead	winter			0.0007	0.0066	0.0013	0.0051
	summer	0.0000	NA	0.0018	0.0065	0.0011	0.0058
Spiny dogfish	winter			0.0642	0.3589	0.0051	0.2958
	summer	0.0563	0.9922	0.0415	0.3561	0.0071	0.3031
Splitnose rockfish	winter			0.1530	0.8999	0.0001	0.0047
	summer	0.0000	0.0049	0.1036	0.3230	0.0082	0.2624
Starry flounder	winter			--	NA	--	NA
	summer	0.0000	NA	--	NA	--	NA
Unspecified skate	winter			0.0005	0.0266	--	NA
	summer	0.0015	0.0171	0.0004	0.0139	0.0002	0.0168
Yellowtail rockfish	winter			--	NA	--	NA
	summer	--	NA	--	NA	--	NA
Non-rebuilding species	**Season**	***Denominator = Retained groundfish (mt)***					
California halibut	winter			--	NA	--	NA
	summer	0.0001	NA	--	NA	--	NA
Dungeness crab	winter			0.0108	0.1771	0.0000	NA
	summer	0.0659	0.2417	0.0014	0.0540	0.0000	0.0027
Eulachon	winter			--	NA	--	NA
	summer	--	NA	--	NA	--	NA
Other non-FMP flatfish	winter			0.0007	0.0123	0.0055	0.0529
	summer	0.0009	0.0137	0.0005	0.0217	0.0052	0.0266
Other non-FMP skate	winter			0.0124	0.0927	0.0105	0.0356
	summer	0.0006	0.0566	0.0041	0.0192	0.0072	0.0186
Other nongroundfish	winter			0.0129	0.0320	0.0462	0.0287
	summer	0.0267	0.0272	0.0090	0.0171	0.0242	0.0126
Tanner crab	winter			0.0010	0.0431	0.0735	0.2114
	summer	--	NA	0.0020	0.0451	0.0543	0.1228

Table 3. Landings (mt), estimated discard (mt), and total catch (mt) of major west coast groundfish species from non-hake, commercial limited entry groundfish bottom trawls in 2009. Discard ratios (Table 2) were multiplied by stratified (area, depth, season) total FMP groundfish landings (excluding Pacific hake) and subsequently summed across strata to generate discard estimates. Species are grouped according to Appendix B. Total catch weight may not appear as the sum of landed and discard values due to rounding.

	North of 40°10' N Lat.			South of 40°10' N Lat.			Coastwide		
	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total
Rebuilding species									
Bocaccio	0.1	0.1	0.2	3.6	16.7	20.3	3.7	16.8	20.4
Canary rockfish	2.0	5.9	7.9	0.9	0.1	1.0	3.0	5.9	8.9
Cowcod (South of 40°10' N. lat.)	NA	NA	NA	--	0.5	0.5	--	0.5	0.5
Darkblotched rockfish	98.7	143.0	241.6	30.5	0.2	30.8	129.2	143.2	272.4
Pacific ocean perch (North of 40°10' N. lat.)	74.0	83.7	157.7	NA	NA	NA	74.0	83.7	157.7
Widow rockfish	2.6	13.2	15.8	1.1	11.6	12.7	3.7	24.8	28.5
Yelloweye rockfish	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1
Non-rebuilding species									
Arrowtooth flounder	3822.4	1477.8	5300.1	0.5	14.0	14.5	3822.8	1491.8	5314.6
Bank rockfish (South of 40°10' N. lat.)	NA	NA	NA	51.1	0.1	51.1	51.1	0.1	51.1
Big skate	5.0	68.8	73.8	2.0	2.8	4.8	7.0	71.6	78.6
Black rockfish (North of 46°16' N. lat.)	--	0.1	0.1	NA	NA	NA	0.0	0.1	0.1
Black rockfish (South of 46°16' N. lat.)	0.3	0.2	0.5	--	0.0	0.0	0.3	0.2	0.5
Blackgill rockfish (South of 40°10' N. lat.)	NA	NA	NA	47.9	0.1	48.0	47.9	0.1	48.0
Cabezon (Oregon)	0.0	0.0	0.1	NA	NA	NA	0.0	0.0	0.1
California skate	--	0.3	0.3	--	2.9	2.9	0.0	3.2	3.2
Chilipepper rockfish	2.3	1.9	4.2	237.0	67.4	304.3	239.3	69.2	308.5
Dover sole	10619.8	537.7	11157.5	991.3	212.6	1203.9	11611.1	750.2	12361.4
English sole	228.4	129.3	357.7	37.3	9.7	47.0	265.7	139.0	404.7
Greenspotted rockfish	0.0	0.0	0.1	0.2	0.1	0.3	0.2	0.1	0.3
Greenstriped rockfish	3.0	14.5	17.5	0.0	1.2	1.2	3.0	15.7	18.7
Grenadiers	65.7	93.3	158.9	26.1	18.6	44.7	91.7	111.9	203.6
Kelp greenling	--	0.0	0.0	--	0.0	0.0	--	0.0	0.0
Lingcod (North of 42° N. lat.)		100.1			NA			100.1	
50% mortality*	77.0	50.0	127.0	NA	NA	NA	77.0	50.0	127.0
Lingcod (South of 42° N. lat.)		0.5			14.4			14.9	
50% mortality*	7.4	0.2	7.7	24.2	4.6	28.8	31.6	7.5	39.1
Longnose skate	756.6	333.9	1090.5	18.1	166.8	184.9	774.7	500.7	1275.4
Longspine thornyhead (North of 34° 27' N. lat.)	918.3	388.9	1307.2	201.0	57.3	258.3	1119.4	446.2	1565.5
Mixed thornyheads	1.0	44.9	45.9	--	1.4	1.4	1.0	46.3	47.3

* Mortality rates provided by the Groundfish Management Team (GMT).

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal place.

Table 3 (continued).

	North of 40°10' N Lat.			South of 40°10' N Lat.			Coastwide		
	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total
Non-rebuilding species (cont.)									
Other flatfish	765.4	524.2	1289.6	115.4	44.0	159.4	880.8	568.1	1449.0
Other groundfish	0.0	131.4	131.4	2.8	31.3	34.1	2.9	162.6	165.5
Other nearshore rockfish	0.0	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2
Other shelf rockfish	0.7	14.1	14.8	1.7	11.0	12.7	2.4	25.1	27.5
Other slope rockfish	103.4	161.2	264.6	18.7	11.0	29.8	122.1	172.2	294.3
Pacific cod (North of 43° N. lat.)	91.2	5.4	96.6	NA	NA	NA	91.2	5.4	96.6
Pacific hake	0.3	809.3	809.6	--	127.4	127.4	0.3	936.6	937.0
Petrale sole	1365.3	200.3	1565.6	329.7	8.2	337.9	1695.0	208.5	1903.5
Redstripe rockfish (North of 40°10' N. lat.)	0.3	0.6	1.0	NA	NA	NA	0.3	0.6	1.0
Sablefish (North of 36° N. lat.)		306.9			13.5			320.3	
50% mortality*	2610.1	153.4	2763.5	378.7	6.7	385.4	2988.7	160.2	3148.9
Sablefish (South of 36° N. lat.)		NA			0.0			0.0	
50% mortality*	NA	NA	NA	19.5	0.0	19.6	19.5	0.0	19.6
Sharpchin rockfish	1.1	6.2	7.3	--	4.8	4.8	1.1	11.0	12.1
Shortbelly rockfish	0.0	--	0.0	--	8.0	8.0	0.0	8.0	8.0
Shortspine thornyhead (North of 34°27' N. lat.)	1203.0	130.4	1333.4	138.7	2.9	141.7	1341.7	133.3	1475.0
Silvergray rockfish (North of 40°10' N. lat.)	0.2	0.2	0.5	NA	NA	NA	0.2	0.2	0.5
Spiny dogfish	42.1	511.3	553.5	36.3	75.7	112.0	78.5	587.0	665.5
Splitnose rockfish	6.6	78.1	84.7	50.9	142.8	193.7	57.5	220.9	278.4
Starry flounder	5.1	2.1	7.3	12.5	0.0	12.5	17.6	2.1	19.8
Unspecified skate	479.8	4.5	484.3	8.0	1.0	8.9	487.8	5.4	493.2
Yellowmouth rockfish (North of 40°10' N. lat.)	2.3	0.1	2.5	--	--	--	2.3	0.1	2.5
Yellowtail rockfish	11.5	9.8	21.3	0.4	0.0	0.4	11.9	9.8	21.7
Non-groundfish species									
California halibut	--	0.0	0.0	48.3	0.0	48.4	48.3	0.1	48.4
Dungeness crab	--	161.3	161.3	0.0	19.1	19.1	0.0	180.3	180.3
Eulachon	--	0.0	0.0	--	--	--	0.0	0.0	0.0
Other non-FMP flatfish	--	61.2	61.2	0.0	8.6	8.6	0.0	69.8	69.8
Other non-FMP skate	0.1	117.0	117.0	--	21.8	21.8	0.1	138.8	138.9
Other nongroundfish	32.2	850.5	882.7	10.3	66.0	76.3	42.5	916.5	959.0
Tanner crab	--	413.9	413.9	--	93.0	93.0	0.0	507.0	507.0

* Mortality rates provided by the Groundfish Management Team (GMT).

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal place.

Table 4. Observed discard ratios and total California halibut landings (mt) from the federal limited entry and open access participants in the state-licensed California halibut trawl fishery in 2009 (only occurs south of 40°10' N latitude). Species are grouped according to Appendix B.

SOUTH of 40°10' N Lat.	**Limited Entry**	**Open Access**
Expansion factor		
Total fleet landings of California halibut (mt)	48.3	81.1
(Based on fish tickets)		
Number of observed vessels	3	3
Number of observed trips	13	9
Number of observed tows	29	30
Observed discard ratios		
Rebuilding species		
Bocaccio	--	--
Canary rockfish	--	--
Cowcod	--	--
Darkblotched rockfish	--	--
Widow rockfish	--	--
Yelloweye rockfish	--	--
Non-rebuilding species		
Big skate	0.1059	0.2053
California skate	0.0367	0.0690
English sole	0.0017	0.0052
Lingcod	0.0001	--
Other flatfish	0.0120	0.0039
Other groundfish	0.0085	0.0483
Spiny dogfish	0.0403	0.0152
Starry flounder	0.0164	--
Unspecified skate	0.0100	0.3346
Non-groundfish species		
California halibut	0.0749	0.0419
Dungeness crab	3.3087	--
Other non-FMP flatfish	0.0006	0.0103
Other nongroundfish	2.5967	0.2288

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0000 when a value is smaller than four decimal places.

Table 5. Landings (mt), estimated discard (mt), total catch (mt), and total fishing mortality (mt) from the federal limited entry and open access participants in the state-licensed California halibut trawl fishery in 2009. Discard ratios (Table 4) were multiplied by total landings of California halibut to generate estimated discard for each sector. Since limited entry vessels participating in the California halibut fishery often land catch from this fishery at the same time as catch from bottom trawl tows targeting groundfish, it was not possible to split out groundfish landed weights for the limited entry bottom trawl and limited entry California halibut sectors. Joint landings for these two sectors are presented in Table 3. Total catch weight may not appear as the sum of landed and discard values due to rounding.

SOUTH of 40°10' N Lat.	Limited Entry		Open Access			All CA Halibut Sectors		
	Landed	Discard	Landed	Discard	Total	OA Landed	Discard	Total Fishing Mortality
Rebuilding species	*Included in Table 3*							
Bocaccio		--	--	--	--	--	--	--
Canary rockfish		--	--	--	--	--	--	--
Cowcod		--	--	--	--	--	--	--
Darkblotched rockfish		--	--	--	--	--	--	--
Widow rockfish		--	--	--	--	--	--	--
Yelloweye rockfish		--	--	--	--	--	--	--
Non-rebuilding species								
Big skate		5.1	--	16.6	16.6	--	21.8	21.8
California scorpionfish (South of 34°27' N. lat.)		--	0.0	--	0.0	0.0	--	0.0
California skate		1.8	--	5.6	5.6	--	7.4	7.4
English sole		0.1	0.0	0.4	0.4	0.0	0.5	0.5
Lingcod (South of 42° N. lat.)		0.0		--			0.0	
50% mortality *		0.0	0.0	--	0.0	0.0	0.0	0.0
Other flatfish		0.6	2.5	0.3	2.9	2.5	0.9	3.4
Other groundfish		0.4	0.0	3.9	3.9	0.0	4.3	4.4
Other nearshore rockfish		--	0.0	--	0.0	0.0	--	0.0
Other shelf rockfish		--	0.0	--	0.0	0.0	--	0.0
Other slope rockfish		--	0.0	--	0.0	0.0	--	0.0
Petrale sole		--	0.1	--	0.1	0.1	--	0.1
Spiny dogfish		2.0	--	1.2	1.2	--	3.2	3.2
Starry flounder		0.8	3.2	--	3.2	3.2	0.8	4.0
Unspecified skate		0.5	0.5	27.1	27.6	0.5	○	28.1
Non-groundfish species								
California halibut		3.6	81.1	3.4	84.4	81.1	7.0	88.1
Dungeness crab		159.9	--	--	--	--	159.9	159.9
Other non-FMP flatfish		0.0	0.3	0.8	1.2	0.3	0.9	1.2
Other nongroundfish		125.5	2.7	18.5	21.2	2.7	144.1	146.7

*The mortality rate for lingcod in the limited entry bottom trawl fishery is provided by the Groundfish Management Team.

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal place.

Table 6. Observed discard ratios and total pink shrimp landings (mt) from the pink shrimp trawl fishery north of 40° 10' N. latitude in 2009. Species are grouped according to Appendix B.

NORTH of 40°10' N Lat.	Pink Shrimp Fishery
Expansion factor	
Total fleet landings of pink shrimp (mt)	14412.17
(Based on fish tickets)	
Number of observed vessels	36
Number of observed trips	58
Number of observed tows	695
Observed discard ratios	
Rebuilding species	
Bocaccio	--
Canary rockfish	0.0000
Darkblotched rockfish	0.0013
Pacific ocean perch	0.0000
Widow rockfish	0.0000
Yelloweye rockfish	--
Non-rebuilding species	
Arrowtooth flounder	0.0014
Cabezon (Oregon)	0.0000
Dover sole	0.0005
English sole	0.0001
Greenspotted rockfish	0.0000
Greenstriped rockfish	0.0001
Lingcod (North of 42° N. lat.)	0.0000
Lingcod (South of 42° N. lat.)	0.0000
Longnose skate	0.0001
Other flatfish	0.0022
Other groundfish	0.0000
Other shelf rockfish	0.0002
Other slope rockfish	0.0000
Pacific hake	0.1344
Petrale sole	0.0000
Redstripe rockfish	0.0000
Sablefish	0.0001
Sharpchin rockfish	0.0000
Shortspine thornyhead	0.0000
Spiny dogfish	0.0000
Splitnose rockfish	0.0001
Starry flounder	0.0000
Yellowtail rockfish	0.0000
Non-groundfish species	
Dungeness crab	0.0000
Eulachon	0.0008
Other non-FMP flatfish	0.0047
Other non-FMP skate	0.0000
Other nongroundfish	0.0024
Pink shrimp + unidentified shrimp	0.0305

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0000 when a value is smaller than four decimal places.

Table 7. Landings (mt), estimated discard (mt), and total catch (mt) from the pink shrimp trawl fishery north of 40° 10' N. latitude in 2009. Discard ratios (Table 6) were multiplied by total landings of pink shrimp to generate estimated discard.

NORTH of 40°10' N Lat.	Pink Shrimp Fishery		
	Landed	Discard	Total
Rebuilding species			
Bocaccio	--	--	--
Canary rockfish	--	0.04	0.04
Darkblotched rockfish	--	18.30	18.30
Pacific ocean perch	--	0.36	0.36
Widow rockfish	--	0.05	0.05
Yelloweye rockfish	--	--	--
Non-rebuilding species			
Arrowtooth flounder	--	20.79	20.79
Cabezon (Oregon)	--	0.01	0.01
Dover sole	--	6.62	6.62
English sole	--	1.08	1.08
Greenspotted rockfish	--	0.00	0.00
Greenstriped rockfish	--	1.00	1.00
Lingcod (North of 42° N. lat.)	--	0.38	0.38
Lingcod (South of 42° N. lat.)	0.04	0.09	0.13
Longnose skate	--	2.06	2.06
Other flatfish	0.02	31.28	31.29
Other groundfish	--	0.17	0.17
Other shelf rockfish	--	2.58	2.58
Other slope rockfish	--	0.32	0.32
Pacific hake	--	1937.13	1937.13
Petrale sole	0.00	0.31	0.31
Redstripe rockfish	--	0.03	0.03
Sablefish	0.07	0.82	0.89
Sharpchin rockfish	--	0.00	0.00
Shortspine thornyhead	--	0.44	0.44
Spiny dogfish	--	0.45	0.45
Splitnose rockfish	--	1.70	1.70
Starry flounder	--	0.03	0.03
Yellowtail rockfish	--	0.27	0.27
Non-groundfish species			
Dungeness crab	--	0.23	0.23
Eulachon	--	10.82	10.82
Other non-FMP flatfish	--	67.33	67.33
Other non-FMP skate	--	0.05	0.05
Other nongroundfish	--	33.92	33.92
Pink shrimp + unidentified shrimp	14412.17	439.43	14851.60

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal place.

Table 8. Expansion factor and observed discard rate description by area and gear type for limited entry (LE) and open access (OA) non-nearshore fixed gear sectors used to expand discard estimates to the fleet level for each area-sector-gear stratum. The stratum discard weights for all sectors were then summarized for each area and totaled coast-wide.

Area	LE and OA Non-nearshore Fixed Gear Sectors + Gear Type				2009 Observer Coverage		
	Expansion Factor: Sablefish Landings		Observed Discard Rate		# Trips	# Sets	# Vessels
North of 40° 10' N Lat.	LE sablefish primary	Longline	LE sablefish-endorsed (North of 36°)	Longline	46	287	9
		Pot	LE sablefish-endorsed (North of 36°)	Pot	27	67	3
	LE sablefish non-primary	Longline	LE sablefish non-endorsed + OA fixed gear	Longline	57	77	26
		Pot	OA fixed gear	Pot	4	10	4
	OA fixed gear	Longline	OA fixed gear	Longline	53	72	24
		Pot	OA fixed gear	Pot	4	10	4
	Expansion Factor: Sablefish Landings						
36° to 40° 10' N Lat.	LE sablefish primary	Longline	LE sablefish-endorsed (North of 36°)	Longline	46	287	9
		Pot	LE sablefish-endorsed (North of 36°)	Pot	27	67	3
	LE sablefish non-primary	Longline	LE sablefish non-endorsed	Longline	18	19	6
	OA fixed gear	Longline	LE sablefish non-endorsed + OA fixed gear	Longline	24	25	9
		Pot	OA fixed gear	Pot	16	17	11
	Expansion Factor: Groundfish Landings						
South of 36° N Lat.	LE sablefish non-primary	Longline	LE non-sablefish-endorsed	Longline	116	247	26
		Pot	OA fixed gear	Pot	10	18	3
	OA fixed gear	Longline	OA fixed gear	Longline	9	23	6
		Pot	OA fixed gear	Pot	10	18	3

Table 9. Observed discard ratios and total sablefish landings (mt) from the LE sablefish primary (endorsed) fixed gear fleet in 2009. Discard ratios were multiplied by the total landings of sablefish to generate discard estimates for each area and gear type, which are combined with other fixed gear sectors in Table 12.

LE Sablefish Primary	North of 40°10' N Lat.		40°10' to 36° N Lat.	
	Longline	Pot	Longline	Pot
Expansion factor				
Total fleet landings of sablefish (mt)	1266.5	432.2	132.2	54.6
(Based on fish tickets)				
	Data combined across areas		*Data combined across areas*	
Number of observed vessels	9	3	9	3
Number of observed trips	46	27	46	27
Number of observed sets	287	67	287	67
Observed discard ratios	***Denominator = Retained sablefish (mt)***			
Rebuilding species				
Bocaccio	--	--	--	--
Canary rockfish	0.0000	--	0.0000	--
Cowcod (South of 40°10' N. lat.)	NA	NA	--	--
Darkblotched rockfish	--	0.0001	--	0.0001
Pacific ocean perch (North of 40°10' N. lat.)	0.0000	0.0000	NA	NA
Widow rockfish	--	--	--	--
Yelloweye rockfish	0.0005	--	0.0005	--
Non-rebuilding species				
Arrowtooth flounder	0.0358	0.0006	0.0358	0.0006
Big skate	0.0041	--	0.0041	--
Blackgill rockfish (South of 40°10' N. lat.)	NA	NA	--	0.0000
California skate	0.0000	--	0.0000	--
Dover sole	0.0013	0.0016	0.0013	0.0016
Greenspotted rockfish	0.0000	0.0000	0.0000	0.0000
Greenstriped rockfish	0.0005	--	0.0005	--
Grenadiers	0.0126	--	0.0126	--
Lingcod (North of 42° N. lat.)	0.0068	--	NA	NA
Lingcod (South of 42° N. lat.)	--	0.0234	--	0.0234
Longnose skate	0.0548	--	0.0548	--
Longspine thornyhead (North of 34°27' N. lat.)	0.0001	0.0000	0.0001	0.0000
Other groundfish	0.0026	0.0000	0.0026	0.0000
Other shelf rockfish	0.0003	0.0000	0.0003	0.0000
Other slope rockfish	0.0016	0.0019	0.0016	0.0019
Pacific cod (North of 40˚10' N. lat.)	0.0002	--	NA	NA
Pacific hake	0.0001	--	0.0001	--
Sablefish	0.0462	0.2741	0.0462	0.2741

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0000 when a value is smaller than four decimal places.

Table 9 (continued).

LE Sablefish Primary	North of 40°10' N Lat.		40°10' to 36° N Lat.	
	Longline	Pot	Longline	Pot
Observed discard ratios (cont.)	***Denominator = Retained sablefish (mt)***			
Non-rebuilding species (cont.)				
Shortspine thornyhead (North of 34°27' N. lat.)	0.0010	0.0000	0.0010	0.0000
Spiny dogfish	0.0928	0.0017	0.0928	0.0017
Splitnose rockfish (North of 40˚10' N. lat.)	0.0000	0.0000	0.0000	0.0000
Unspecified skate	0.0001	--	0.0001	--
Yellowmouth rockfish (North of 40˚10' N. lat.)	0.0000	--	0.0000	--
Yellowtail rockfish	0.0000	--	0.0000	--
Non-groundfish species				
Dungeness crab	--	0.0000	--	0.0000
Other non-FMP flatfish	0.0001	--	0.0001	--
Other non-FMP skate	0.0016	0.0000	0.0016	0.0000
Other nongroundfish	0.3426	0.0023	0.3426	0.0023
Tanner crab	0.0006	0.0003	0.0006	0.0003

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0000 when a value is smaller than four decimal places.

Table 10. Observed discard ratios, total sablefish landings (mt), and total groundfish landings (mt) from the LE non-primary sablefish fixed gear fleet in 2009. Discard ratios were multiplied by total landings of sablefish north of 36° N latitude and total landings of FMP groundfish south of 36° N latitude to generate discard estimates, which are combined with other fixed gear sectors in Table 12.

LE Non-primary	**North of 40°10' N Lat.**		**40°10' to 36° N Lat.**		**South of 36° N Lat.**	
	Longline	Pot	Longline	Pot	Longline	Pot
Expansion factor (Based on fish tickets)						
Total fleet landings of sablefish (mt)	191.9	8.2	105.7	--		
Total fleet landings of groundfish (mt)					412.3	1.4
	LE non-primary + OA data	*OA pot data*	*LE non-primary*		*LE non-primary*	*OA pot data*
Number of observed vessels	26	4	6	--	26	3
Number of observed trips	57	4	18	--	116	10
Number of observed sets	77	10	19	--	247	18
Observed discard ratios	***Denominator = Retained sablefish (mt)***				***Denominator = Retained groundfish (mt)***	
Rebuilding species						
Bocaccio	--	--	--	--	--	--
Canary rockfish	0.0001	--	--	--	--	--
Cowcod (South of 40°10' N. lat.)	NA	NA	--	--	--	--
Darkblotched rockfish	--	--	--	--	--	--
Pacific ocean perch (North of 40°10' N. lat.)	--	--	NA	NA	NA	NA
Widow rockfish	--	--	--	--	--	--
Yelloweye rockfish	0.0010	--	--	--	--	--
Non-rebuilding species						
Arrowtooth flounder	0.0541	--	--	--	--	--
Blackgill rockfish (South of 40°10' N. lat.)	NA	NA	--	--	0.0000	--
California skate	--	--	--	--	0.0000	--
Chilipepper rockfish (South of 40°10' N. lat.)	NA	NA	0.0002	--	--	--
Dover sole	0.0008	--	0.0031	--	0.0070	0.0003
Greenspotted rockfish	--	--	--	--	--	--
Grenadiers	--	--	0.0129	--	0.0039	--
Lingcod (North of 42° N. lat.)	0.0034	0.0088	NA	NA	NA	NA
Lingcod (South of 42° N. lat.)	0.0009	--	--	--	--	--
Longnose skate	0.0199	--	0.0522	--	0.1075	--
Longspine thornyhead (North of 34°27' N. lat.)	--	--	0.0003	--	0.0000	0.0000
Longspine thornyhead (South of 34°27' N. lat.)	NA	NA	NA	NA	0.0106	--
Mixed thornyheads	--	--	--	--	0.0041	--
Other flatfish	--	--	--	--	0.0000	--
Other groundfish	0.0004	--	0.0027	--	0.0007	--
Other nearshore rockfish	0.0005	--	--	--	--	--
Other shelf rockfish	--	--	--	--	--	--
Other slope rockfish	0.0074	--	--	--	0.0000	0.0001
Pacific hake	0.0011	--	--	--	0.0012	--
Petrale sole	--	--	0.0001	--	--	0.0002
Sablefish	0.2218	0.0120	0.2397	--	0.0338	0.2049
Shortspine thornyhead (North of 34°27' N. lat.)	0.0098	--	0.0010	--	0.0001	--
Shortspine thornyhead (South of 34°27' N. lat.)	NA	NA	NA	NA	0.0335	--
Spiny dogfish	0.1105	--	0.0244	--	0.0026	--
Splitnose rockfish (North of 40°10' N. lat.)	0.0000	--	NA	NA	NA	NA
Splitnose rockfish (South of 40°10' N. lat.)	NA	NA	--	--	--	0.0005
Unspecified skate	--	--	--	--	0.0008	--
Yellowtail rockfish	0.0007	--	--	--	--	--
Non-groundfish species						
Dungeness crab	0.0000	0.0016	--	--	--	--
Other non-FMP skate	0.0072	--	--	--	0.0038	--
Other nongroundfish	0.1300	0.0024	0.0112	--	0.1395	0.0173
Tanner crab	--	--	0.0018	--	0.0001	0.0005

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0000 when a value is smaller than four decimal places.

Table 11. Observed discard ratios, total sablefish landings (mt), and total groundfish landings (mt) from the open access fixed gear fleet in 2009. Discard ratios were multiplied by total landings of sablefish north of 36° N latitude and total landings of FMP groundfish south of 36° N latitude to generate discard estimates for each gear type, which are combined with other fixed gear sectors in Table 12.

OA Fixed Gear	**North of 40°10' N Lat.**		**40°10' to 36° N Lat.**		**South of 36° N Lat.**	
	Hook-and-line	Pot	Hook-and-line	Pot	Hook-and-line	Pot
Expansion factor (Based on fish tickets)						
Total fleet landings of sablefish (mt)	295.3	37.7	37.7	137.2		
Total fleet landings of groundfish (mt)					288.9	196.6
			LE non-primary + OA data			
Number of observed vessels	24	4	9	11	6	3
Number of observed trips	53	4	24	16	9	10
Number of observed sets	72	10	25	17	23	18
Observed discard ratios	***Denominator = Retained sablefish (mt)***				***Denominator = Retained groundfish (mt)***	
Rebuilding species						
Bocaccio	--	--	--	--	--	--
Canary rockfish	0.0001	--	--	--	--	--
Cowcod (South of 40°10' N. lat.)	NA	NA	--	--	--	--
Darkblotched rockfish	--	--	--	--	--	--
Pacific ocean perch (North of 40°10' N. lat.)	--	--	NA	NA	NA	NA
Widow rockfish	--	--	--	--	--	--
Yelloweye rockfish	0.0011	--	--	--	--	--
Non-rebuilding species						
Arrowtooth flounder	0.0579	--	--	0.0005	--	--
Blackgill rockfish (South of 40°10' N. lat.)	NA	NA	--	0.0020	0.0094	--
Chilipepper rockfish	--	--	0.0001	--	--	--
Dover sole	0.0009	--	0.0036	0.0012	0.0008	0.0003
Grenadiers	--	--	0.0126	--	--	--
Lingcod (North of 42° N. lat.)	0.0037	0.0088	NA	NA	NA	NA
Lingcod (South of 42° N. lat.)	0.0010	--	--	--	--	--
Longnose skate	0.0202	--	0.0565	--	0.0900	--
Longspine thornyhead (North of 34°27' N. lat.)	--	--	0.0005	--	--	0.0000
Longspine thornyhead (South of 34°27' N. lat.)	--	--	--	--	0.0007	--
Other groundfish	0.0003	--	0.0022	--	0.0014	--
Other nearshore rockfish	0.0005	--	--	--	--	--
Other shelf rockfish	--	--	--	--	0.0001	--
Other slope rockfish	0.0079	--	0.0002	0.0011	--	0.0001
Pacific hake	0.0012	--	--	--	0.0012	--
Petrale sole	--	--	0.0001	--	--	0.0002
Sablefish	0.2329	0.0120	0.1998	0.1414	0.0708	0.2049
Sharpchin rockfish	--	--	--	0.0003	--	--
Shortspine thornyhead (North of 34°27' N. lat.)	0.0105	0.0000	0.0036	0.0000	0.0035	0.0000
Shortspine thornyhead (South of 34°27' N. lat.)	NA	NA	NA	NA	0.0050	--
Spiny dogfish	0.1055	--	0.0296	0.0003	0.0004	--
Splitnose rockfish (North of 40°10' N. lat.)	0.0000	--	NA	NA	NA	NA
Splitnose rockfish (South of 40°10' N. lat.)	NA	NA	--	0.0001	--	0.0005
Unspecified skate	--	--	--	--	0.0002	--
Yellowtail rockfish	0.0007	--	--	--	--	--
Non-groundfish species						
Dungeness crab	0.0000	0.0016	--	0.0001	--	--
Other non-FMP skate	0.0077	--	0.0005	--	0.0004	--
Other nongroundfish	0.1276	0.0024	0.0134	0.0019	0.0776	0.0173
Tanner crab	--	--	0.0020	0.0008	0.0006	0.0005

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0000 when a value is smaller than four decimal places.

Table 12. Landings (mt), estimated discard mortality (mt), and total catch (mt) of rebuilding, non-rebuilding groundfish, and non-groundfish species in non-nearshore fixed gear fisheries by area during 2009. Discard ratios were multiplied by total landings of sablefish north of 36° N latitude and total landings of FMP groundfish south of 36° N latitude to generate discard estimates (Tables 9-11).

	North of 40°10' N Lat.			40°10' to 36° N Lat.			South of 36° N Lat.			Coastwide
	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total	Total
Rebuilding species										
Bocaccio	0.2	--	0.2	0.7	--	0.7	0.7	--	0.7	1.6
Canary rockfish	0.2	0.1	0.3	0.0	0.0	0.0	--	--	--	0.3
Cowcod (South of 40°10' N. lat.)	NA	NA	NA	--	--	--	0.1	--	0.1	0.1
Darkblotched rockfish	7.5	0.1	7.6	0.1	0.0	0.1	0.3	--	0.3	8.0
Pacific ocean perch (North of 40°10' N. lat.)	0.4	0.0	0.5	NA	NA	NA	NA	NA	NA	0.5
Widow rockfish	0.0	--	0.0	0.1	--	0.1	0.2	--	0.2	0.3
Yelloweye rockfish	0.0	1.2	1.2	--	0.1	0.1	--	--	--	1.3
Non-rebuilding species										
Arrowtooth flounder	5.5	73.1	78.6	0.0	4.8	4.8	--	--	--	83.4
Bank rockfish (South of 40°10' N. lat.)	NA	NA	NA	0.1	--	0.1	0.1	--	0.1	0.2
Big skate	--	5.2	5.2	--	0.5	0.5	--	--	--	5.8
Blackgill rockfish (South of 40°10' N. lat.)	NA	NA	NA	2.0	0.3	2.3	77.1	2.7	79.9	82.1
California skate	--	0.0	0.0	--	0.0	0.0	--	0.0	0.0	0.0
Chilipepper rockfish	0.3	--	0.3	0.4	0.0	0.4	0.1	--	0.1	0.8
Dover sole	2.1	5.4	7.5	0.0	1.8	1.8	0.2	2.0	2.1	11.4
Greenspotted rockfish	0.0	0.1	0.1	0.0	0.0	0.0	0.6	--	0.6	0.7
Greenstriped rockfish	0.0	0.6	0.6	--	0.1	0.1	0.1	--	0.1	0.7
Grenadiers	--	15.9	15.9	23.3	3.5	26.8	0.0	1.6	1.6	44.4
Lingcod (North of 42° N. lat.)	22.6	10.8	33.3	--	0.9	0.9	NA	NA	NA	34.2
Lingcod (South of 42° N. lat.)	4.0	10.6	14.6	1.5	1.3	2.8	0.3	--	0.3	17.6
Longnose skate	6.2	79.1	85.4	0.0	14.9	14.9	2.6	70.3	73.0	173.3
Longspine thornyhead (North of 34°27' N. lat.)	0.0	0.1	0.1	0.7	0.1	0.7	0.1	0.0	0.1	1.0
Longspine thornyhead (South of 34°27' N. lat.)	NA	NA	NA	NA	NA	NA	15.1	4.6	19.7	19.7
Mixed thornyheads	--	--	--	0.0	--	0.0	1.2	1.7	2.9	2.9
Other flatfish	0.0	--	0.0	0.5	--	0.5	1.1	0.0	1.1	1.6
Other groundfish	0.0	3.4	3.4	0.3	0.7	1.0	0.4	0.7	1.1	5.5
Other nearshore rockfish	--	0.2	0.2	--	--	--	--	--	--	0.2
Other shelf rockfish	1.3	0.3	1.7	0.9	0.0	0.9	5.6	0.0	5.6	8.2
Other slope rockfish	87.0	6.6	93.6	5.2	0.5	5.7	2.4	0.0	2.4	101.6

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal.

Table 12 (continued).

	North of 40°10' N Lat.			40°10' to 36° N Lat.			South of 36° N Lat.			Coastwide
	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total	Total
Non-rebuilding species (cont.)										
Pacific cod	1.2	0.3	1.4	NA	NA	NA	NA	NA	NA	1.4
Pacific hake	--	0.7	0.7	0.3	0.0	0.3	0.1	0.8	0.9	1.9
Petrale sole	0.1	--	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2
Sablefish		288.8			73.3			75.0		
20% mortality *	2231.7	57.8	2289.4	467.4	14.7	482.0	634.3	15.0	649.3	3420.8
Sharpchin rockfish	--	--	--	--	0.0	0.0	--	--	--	0.0
Shortspine thornyhead (North of 34°27' N. lat.)	17.7	6.2	23.9	10.4	0.4	10.7	6.4	1.0	7.5	42.1
Shortspine thornyhead (South of 34°27' N. lat.)	NA	NA	NA	NA	NA	NA	151.5	15.3	166.8	166.8
Silvergray rockfish (North of 40°10' N. lat.)	0.2	--	0.2	NA	NA	NA	NA	NA	NA	0.2
Spiny dogfish	27.8	170.6	198.5	0.4	16.1	16.5	--	1.2	1.2	216.2
Splitnose rockfish	1.2	0.1	1.3	0.0	0.0	0.0	0.1	0.1	0.2	1.5
Starry flounder	--	--	--	0.0	--	0.0	--	--	--	0.0
Unspecified skate	25.2	0.1	25.3	0.0	0.0	0.0	1.7	0.4	2.1	27.4
Yellowmouth rockfish (North of 40°10' N. lat.)	0.3	0.0	0.4	NA	NA	NA	NA	NA	NA	0.4
Yellowtail rockfish	0.1	0.4	0.5	0.6	--	0.6	0.0	--	0.0	1.1
Non-groundfish species										
California halibut	--	--	--	0.3	--	0.3	0.1	--	0.1	0.4
Dungeness crab	1.2	0.1	1.2	0.0	0.0	0.0	--	--	--	1.3
Other non-FMP flatfish	--	0.1	0.1	--	0.0	0.0	--	--	--	0.1
Other non-FMP skate	--	5.8	5.8	--	0.2	0.2	--	1.7	1.7	7.7
Other nongroundfish	10.7	497.6	508.3	3.8	47.4	51.2	5.4	83.3	88.8	648.3
Tanner crab	--	0.9	0.9	--	0.5	0.5	0.0	0.3	0.3	1.6

* Mortality rates provided by the Groundfish Management Team (GMT).

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal place.

Table 13. Commercial landings of nearshore species (mt) in Oregon and California during 2009, partitioned by depth interval and groundfish management area. Landings were partitioned by depth based on observed catch from 2003 to 2009. Nearshore species and groups are listed in Appendix C.

	Observed landings (mt) 2003-2009	2009 Total landings (mt)	Percentage of observed catch by depth (fathoms) 2003-2009			2009 Total landings reallocated by depth (fathoms)		
			0 - 10	11 - 20	> 20	0 - 10	11 - 20	> 20
NORTH of 40° 10' N Lat.								
Nearshore species - commercial								
Black rockfish (South of 46°16' N. lat.)	86.6	225.5	47.5%	50.2%	2.4%	107.1	113.1	5.3
Blue rockfish	10.3	5.9	23.0%	67.2%	9.8%	1.4	4.0	0.6
Cabezon (Oregon)	12.2	29.8	28.3%	68.7%	3.0%	8.4	20.4	0.9
Cabezon (California)	1.3	1.8	46.6%	39.7%	13.8%	0.9	0.7	0.3
Kelp greenling	8.1	20.9	49.8%	48.3%	1.9%	10.4	10.1	0.4
Lingcod (North of 42˚ N. lat.)	11.7	26.6	30.8%	64.0%	5.3%	8.2	17.0	1.4
Lingcod (South of 42˚ N. lat.)	4.0	5.2	30.4%	47.9%	21.7%	1.6	2.5	1.1
Other minor nearshore rockfish	9.1	13.8	25.2%	59.1%	15.7%	3.5	8.1	2.2
Total:						141.4	176.0	12.1
SOUTH of 40° 10' N Lat.								
Nearshore species - commercial								
Black rockfish	0.8	2.2	46.3%	48.4%	5.3%	1.0	1.1	0.1
Blue rockfish	0.8	2.8	52.7%	40.4%	6.9%	1.5	1.1	0.2
Cabezon (California)	4.9	16.6	94.6%	3.9%	1.4%	15.7	0.7	0.2
California sheephead	8.1	32.6	72.5%	26.4%	1.1%	23.6	8.6	0.4
Deeper nearshore rockfish	5.7	31.3	30.7%	61.3%	8.0%	9.6	19.2	2.5
Gopher rockfish	2.8	24.1	62.0%	35.5%	2.6%	14.9	8.6	0.6
Kelp greenling	0.4	1.1	91.5%	6.8%	1.7%	1.0	0.1	0.0
Lingcod	3.3	13.3	54.4%	41.8%	3.9%	7.2	5.6	0.5
Shallow nearshore rockfish	2.0	27.6	86.4%	11.2%	2.4%	23.8	3.1	0.7
California scorpionfish (South of 34°27' N. lat.)*	*	3.0	86.4%	11.2%	2.4%	2.6	0.3	0.1
Total:						101.0	48.2	5.3

* Observer data were not sufficient to allocate California scorpionfish landings to each depth interval. This species was previously part of the shallow nearshore rockfish grouping and the percentages from the grouping were used to allocate California scorpionfish by depth.

Table 14. Observed discard ratios and total nearshore species landings (mt) from the commercial nearshore fixed gear fishery in 2009 by groundfish management area and depth. Nearshore species and groups are listed in Appendix C.

	North of 40° 10' N lat.			South of 40° 10' N lat.		
	0 - 10 fm	11 - 20 fm	> 20 fm	0 - 10 fm	11 - 20 fm	> 20 fm
Expansion factor (Based on fish tickets)						
Total landings of nearshore species (mt)	141.4	176.0	12.1	101.0	48.2	5.3
		*Data combined across depths **			*Data combined across depths **	
Number of observed vessels	37	35		14	10	
Number of observed trips	97	113		25	29	
Number of observed sets	118	144		32	47	
Observed discard ratios	***Denominator = Retained nearshore species (mt)***					
Rebuilding species						
Bocaccio	--	--		--	--	
Canary rockfish	0.0039	0.0226		0.0016	0.0287	
Cowcod (South of 40°10' N. lat.)	NA	NA		--	--	
Darkblotched rockfish	--	--		--	--	
Pacific ocean perch (North of 40°10' N. lat.)	--	--		NA	NA	
Widow rockfish	--	0.0001		--	--	
Yelloweye rockfish	0.0006	0.0043		--	0.0005	
Non-rebuilding species						
Black rockfish (South of 46°16' N. lat.) **	0.0449	0.0261		0.0176	0.0020	
Blue rockfish **	0.0102	0.0257		0.0105	0.0121	
Cabezon (Oregon) **	0.0220	0.0236		NA	NA	
Cabezon (California) **	--	0.0006		0.0323	0.0072	
California scorpionfish (South of 34°27' N. lat.) **	NA	NA		--	0.0211	
Deeper nearshore rockfish **	NA	NA		0.0168	0.0078	
Gopher rockfish (South of 40°10' N. lat.) **	NA	NA		0.0277	0.0737	
Greenstriped rockfish	--	--		--	0.0007	
Kelp greenling **	0.0390	0.0116		0.0442	0.0687	
Lingcod (North of 42° N. lat.) **	0.0795	0.0639		NA	NA	
Lingcod (South of 42° N. lat.) **	0.0005	0.0049		0.1263	0.1726	
Other flatfish	--	--		0.0003	0.0021	
Other groundfish	--	--		--	0.0063	
Other minor nearshore rockfish **	0.0018	0.0037		--	--	
Other shelf rockfish	0.0003	0.0006		0.0020	0.0002	
Shallow nearshore rockfish **	NA	NA		0.0101	0.0223	
Spiny dogfish	--	0.0004		0.0371	0.0506	
Yellowtail rockfish	0.0004	0.0021		--	--	
Non-groundfish species						
Buffalo sculpin **	--	0.0001		0.0004	0.0013	
California halibut	--	--		0.0256	--	
California sheephead **	--	--		0.0063	0.0105	
Dungeness crab	0.0040	0.0108		0.0006	0.0008	
Other greenling **	0.0000	--		--	--	
Other nongroundfish	0.0054	0.0152		0.0496	0.1177	
Red Irish lord **	0.0002	0.0001		--	--	

* Observer data were combined across the 11-20 and >20 fathom depth intervals before computing discard ratios to maintain an adequate sample size.

** Included in nearshore species denominator for discard ratios.

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0000 when a value is smaller than four decimal places.

Table 15a. Gross estimated discard (mt), discard mortality rates (provided by the Groundfish Management Team), estimated discard mortality (mt), total landings (mt), and total fishing mortality (mt) for the 2009 commercial nearshore fixed gear fishery north of 40° 10' N latitude by depth.

Nearshore North of 40° 10' N lat.	Gross estimated discard (mt) by depth (fm)			Discard mortality rate * by depth (fm)			Estimated discard mortality (mt) by depth (fm)			Total estimated discard mortality (mt)	Total Landings (mt)	Total fishing mortality (mt)
	0-10	11-20	> 20	0-10	11-20	> 20	0-10	11-20	> 20			
Rebuilding species												
Bocaccio	--	--	--	10%	70%	100%	--	--	--	--	--	--
Canary rockfish	0.54	3.98	0.27	10%	55%	100%	0.05	2.19	0.27	2.52	--	2.52
Darkblotched rockfish	--	--	--	--	--	--	--	--	--	--	0.09	0.09
Pacific ocean perch	--	--	--	--	--	--	--	--	--	--	--	--
Widow rockfish	--	0.01	0.00	50%	90%	100%	--	0.01	0.00	0.01	0.01	0.02
Yelloweye rockfish	0.08	0.76	0.05	10%	50%	100%	0.01	0.38	0.05	0.44	--	0.44
Non-rebuilding species												
Arrowtooth flounder	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Black rockfish (South of 46° 16' N. lat.)	6.35	4.59	0.32	10%	40%	90%	0.64	1.84	0.28	2.76	225.46	228.21
Blue rockfish	1.44	4.52	0.31	10%	60%	100%	0.14	2.71	0.31	3.17	5.93	9.09
Cabezon (Oregon)	3.11	4.16	0.29	7%	7%	7%	0.22	0.29	0.02	0.53	29.78	30.31
Cabezon (California)	0.00	0.11	0.01	7%	7%	7%	0.00	0.01	0.00	0.01	1.84	1.85
Chilipepper	--	--	--	10%	55%	100%	--	--	--	--	0.00	0.00
Dover sole	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Greenspotted rockfish	--	--	--	10%	55%	100%	--	--	--	--	0.01	0.01
Kelp greenling	5.52	2.04	0.14	7%	7%	7%	0.39	0.14	0.01	0.54	20.89	21.43
Lingcod (North of 42° N. lat.)	11.23	11.24	0.78	7%	7%	7%	0.79	0.79	0.05	1.63	26.56	28.19
Lingcod (South of 42° N. lat.)	0.07	0.86	0.06	7%	7%	7%	0.01	0.06	0.00	0.07	5.23	5.30
Longnose skate	--	--	--	7%	7%	7%	--	--	--	--	0.04	0.04
Other flatfish	--	--	--	7%	7%	7%	--	--	--	--	0.00	0.00
Other groundfish	--	--	--	7%	7%	7%	--	--	--	--	0.04	0.04
Other minor nearshore rockfish	0.26	0.65	0.04	10%	40%	100%	0.03	0.26	0.04	0.33	13.76	14.09
Other shelf rockfish	0.05	0.11	0.01	10%	55%	100%	0.00	0.06	0.01	0.07	5.97	6.04
Other slope rockfish	--	--	--	--	--	--	--	--	--	--	0.04	0.04

* Discard mortality rates provided by the Groundfish Management Team (GMT).

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 15a (continued).

Nearshore North of 40° 10' N lat.	Gross estimated discard (mt) by depth (fm)			Discard mortality rate * by depth (fm)			Estimated discard mortality (mt) by depth (fm)			Total estimated discard mortality (mt)	Total Landings (mt)	Total fishing mortality (mt)
	0-10	11-20	> 20	0-10	11-20	> 20	0-10	11-20	> 20			
Sablefish	--	--	--	--	--	--	--	--	--	--	0.72	0.72
Silvergrey rockfish	--	--	--	10%	55%	100%	--	--	--	--	0.00	0.00
Spiny dogfish		0.06	0.00	7%	7%	7%	0.00	0.00	0.00	0.00	--	0.00
Splitnose rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Unspecified skate	--	--	--	7%	7%	7%	--	--	--	--	0.02	0.02
Yellowtail rockfish	0.06	0.37	0.03	10%	30%	75%	0.06	0.37	0.03	0.45	0.73	1.18
Non-groundfish species												
Buffalo sculpin	--	0.01	0.00	7%	7%	7%	--	0.00	0.00	0.00	--	0.00
Dungeness crab	0.56	1.90	0.13	--	--	--	0.56	1.90	0.13	2.59	5.00	7.60
Other greenling	0.00	--	--	7%	7%	7%	--	--	--	--	0.00	0.00
Other nongroundfish	0.77	2.68	0.18	--	--	--	0.77	2.68	0.18	3.63	0.35	3.98
Red Irish lord	0.02	0.02	0.00	7%	7%	7%	0.02	0.02	0.00	0.05	--	0.05

* Discard mortality rates provided by the Groundfish Management Team (GMT).

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 15b. Gross estimated discard (mt), discard mortality rates (provided by the Groundfish Management Team), estimated discard mortality (mt), total landings (mt), and total fishing mortality (mt) for the 2009 commercial nearshore fixed gear fishery south of 40° 10' N latitude by depth.

Nearshore South of 40° 10' N lat	Gross estimated discard (mt) by depth (fm)			Discard mortality rate * by depth (fm)			Estimated discard mortality (mt) by depth (fm)			Total estimated discard mortality (mt)	Total Landings (mt)	Total fishing mortality (mt)
	0-10	11-20	> 20	0-10	11-20	> 20	0-10	11-20	> 20			
Rebuilding species												
Bocaccio	--	--	--	10%	70%	100%	--	--	--	--	0.96	0.96
Canary rockfish	0.16	1.38	0.15	10%	55%	100%	0.02	0.76	0.15	0.93	0.01	0.94
Cowcod (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.04	0.04
Darkblotched rockfish	--	--	--	--	--	--	--	--	--	--	0.03	0.03
Widow rockfish	--	--	--	50%	90%	100%	--	--	--	--	0.01	0.01
Yelloweye rockfish		0.02	0.00	10%	50%	100%	0.00	0.01	0.00	0.01	0.02	0.03
Non-rebuilding species										--		
Bank rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Black rockfish (South of 46°16' N. lat.)	1.78	0.10	0.01	10%	40%	90%	0.18	0.04	0.01	0.23	2.21	2.44
Blackgill rockfish (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--	2.44	2.44
Blue rockfish	1.06	0.59	0.06	10%	60%	100%	0.11	0.35	0.06	0.52	2.79	3.32
Cabezon (California)	3.26	0.35	0.04	7%	7%	7%	0.23	0.02	0.00	0.26	16.56	16.81
California scorpionfish (South of 34°27' N. lat.)	--	1.02	0.11	7%	7%	7%		0.07	0.01	0.08	2.98	3.06
Chilipepper rockfish	--	--	--	10%	55%	100%	--	--	--	--	0.15	0.15
Deeper nearshore rockfish	1.70	0.38	0.04	10%	40%	90%	0.17	0.15	0.04	0.36	31.29	31.65
Dover sole	--	--	--	--	--	--	--	--	--	--	0.01	0.01
Gopher rockfish (South of 40°10' N. lat.)	2.80	3.55	0.39	10%	45%	100%	0.28	1.60	0.39	2.27	24.12	26.39
Greenspotted rockfish	--	--	--	10%	55%	100%	--	--	--	--	0.03	0.03
Greenstriped rockfish	--	0.03	0.00	10%	55%	100%	--	--	--	--	0.00	0.00
Kelp greenling	4.47	3.31	0.36	7%	7%	7%	0.31	0.23	0.03	0.57	1.13	1.70
Lingcod	12.75	8.33	0.92	7%	7%	7%	0.89	0.58	0.06	1.54	13.30	14.84
Longspine thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Mixed thornyheads	--	--	--	--	--	--	--	--	--	--	0.02	0.02
Other flatfish	0.03	0.10	0.01	7%	7%	7%	0.00	0.01	0.00	0.01	0.78	0.79
Other groundfish	--	0.31	0.03	7%	7%	7%		0.02	0.00	0.02	0.84	0.87
Other shelf rockfish	0.20	0.01	0.00	10%	55%	100%	0.02	0.01	0.00	0.03	7.07	7.10
Other slope rockfish	--	--	--	--	--	--	--	--	--	--	0.02	0.02

* Discard mortality rates provided by the Groundfish Management Team (GMT).

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 15b (continued).

Nearshore South of 40° 10' N lat	Gross estimated discard (mt) by depth (fm)			Discard mortality rate * by depth (fm)			Estimated discard mortality (mt) by depth (fm)			Total estimated discard mortality (mt)	Total Landings (mt)	Total fishing mortality (mt)
	0-10	11-20	> 20	0-10	11-20	> 20	0-10	11-20	> 20			
Non-rebuilding species (cont.)												
Petrale sole	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Sablefish (North of 36° N. lat.)	--	--	--	--	--	--	--	--	--	--	2.45	2.45
Sablefish (South of 36° N. lat.)	--	--	--	--	--	--	--	--	--	--	5.03	5.03
Shallow nearshore rockfish	1.02	1.07	0.12	10%	45%	100%	0.10	0.48	0.12	0.70	27.58	28.29
Shortbelly rockfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Shortspine thornyhead (North of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.19	0.19
Spiny dogfish	3.74	2.44	0.27	7%	7%	7%	0.00	0.01	0.00	0.01	0.03	0.04
Starry flounder	--	--	--	--	--	--	--	--	--	--	0.06	0.06
Unspecified skate	--	--	--	7%	7%	7%	--	--	--	--	0.00	0.00
Yellowtail rockfish	--	--	--	10%	30%	75%	--	--	--	--	0.37	0.37
Non-groundfish species												
Buffalo sculpin	0.04	0.06	0.01	7%	7%	7%	0.04	0.06	0.01	0.11	--	0.11
California halibut	2.59	--	--	--	--	--	2.59	--	--	2.59	1.38	3.97
California sheephead	0.64	0.50	0.06	7%	7%	7%	0.04	0.04	0.00	0.08	32.59	32.68
Dungeness crab	0.06	0.04	0.00	--	--	--	0.06	0.04	0.00	0.11	1.32	1.43
Other non-FMP flatfish	--	--	--	--	--	--	--	--	--	--	0.00	0.00
Other nongroundfish	5.01	5.68	0.63	--	--	--	5.01	5.68	0.63	11.32	45.80	57.11

* Discard mortality rates provided by the Groundfish Management Team (GMT).

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 16. Landings (mt), estimated discard (mt), and estimated total fishing mortality (mt) of major U.S. west coast groundfish species in fishery sectors observed by the West Coast Groundfish Observer Program in 2009.

	LE bottom trawl			California halibut			Pink shrimp			Non-nearshore fixed gear			Nearshore fixed gear		
	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total
Rebuilding species															
Bocaccio (South of 40°10' N. lat.)	3.7	16.8	20.4	--	--	--	--	--	--	1.6	--	1.6	--	1.0	1.0
Canary rockfish	3.0	5.9	8.9	--	--	--	--	0.0	0.0	0.2	0.1	0.3	0.0	3.4	3.5
Cowcod (South of 40°10' N. lat.)	--	0.5	0.5	--	--	--	--	--	--	0.1	--	0.1	0.0	--	0.0
Darkblotched rockfish	129.2	143.2	272.4	--	--	--	--	18.3	18.3	7.9	0.1	8.0	0.1	--	0.1
Pacific ocean perch (North of 40°10' N. lat.)	74.0	83.7	157.7	--	--	--	--	0.4	0.4	0.4	0.0	0.5	--	--	--
Widow rockfish	3.7	24.8	28.5	--	--	--	--	0.0	0.0	0.3	--	0.3	0.0	0.0	0.0
Yelloweye rockfish	0.1	0.0	0.1	--	--	--	--	--	--	0.0	1.3	1.3	0.0	0.5	0.5
Non-rebuilding species															
Arrowtooth flounder	3822.8	1491.8	5314.6	--	--	--	--	20.8	20.8	5.5	77.9	83.4	0.0	--	0.0
Black rockfish (North of 46°16' N. lat.)	0.0	0.1	0.1	--	--	--	--	--	--	--	--	--	--	--	--
Black rockfish (South of 46°16' N. lat.)	0.3	0.2	0.5	--	--	--	--	--	--	--	--	--	227.7	3.0	230.7
Cabezon (South of 42° N. lat.)	--	--	--	--	--	--	--	--	--	--	--	--	18.4	0.3	18.7
California scorpionfish (South of 34°27' N. lat.)	--	--	--	0.0	--	0.0	--	--	--	--	--	--	3.0	0.1	3.1
Chilipepper rockfish (South of 40°10' N. lat.)	237.0	67.4	304.3	--	--	--	--	--	--	0.5	0.0	0.5	--	0.1	0.1
Dover sole	11611.1	750.2	12361.4	--	--	--	--	6.6	6.6	2.3	9.2	11.4	0.0	--	0.0
English sole	265.7	139.0	404.7	0.0	0.5	0.5	--	1.1	1.1	--	--	--	--	--	--
Lingcod (North of 42° N. lat.)	77.0	50.0	127.0	--	--	--	--	0.4	0.4	22.6	11.7	34.2	26.6	1.6	28.2
Lingcod (South of 42° N. lat.)	31.6	7.5	39.1	0.0	0.0	0.0	0.0	0.1	0.1	5.7	11.9	17.6	18.5	1.6	20.1
Longnose Skate	774.7	500.7	1275.4	--	--	--	--	2.1	2.1	8.9	164.4	173.3	0.0	--	0.0
Other flatfish	880.8	568.1	1449.0	2.5	0.9	3.4	0.0	31.3	31.3	1.6	0.0	1.6	0.8	0.0	0.8
Other groundfish	667.9	941.9	1609.8	0.5	64.2	64.8	--	0.6	0.6	79.2	220.2	299.3	23.5	30.9	54.4
Big skate	7.0	71.6	78.6	--	21.8	21.8	--	--	--	--	5.8	5.8	--	--	--
Cabezon (Oregon)	0.0	0.0	0.1	--	--	--	--	0.0	0.0	--	--	--	0.5	29.8	30.3
Kelp greenling	--	0.0	0.0	--	--	--	--	--	--	--	--	--	22.0	1.1	23.1
Other Skates	487.8	8.7	496.5	0.5	35.0	35.5	--	--	--	26.9	0.6	27.5	0.0	--	0.0
Spiny dogfish	78.5	587.0	665.5	--	3.2	3.2	--	0.4	0.4	28.2	187.9	216.2	0.0	0.0	0.0
Unspecified grenadiers	91.7	111.9	203.6	--	--	--	--	--	--	23.4	21.1	44.4	--	--	--
Other	2.9	162.6	165.5	0.0	4.3	4.4	--	0.2	0.2	0.7	4.8	5.5	0.9	0.0	0.9
Minor rockfish (North of 40°10' N. lat.)	120.3	277.1	397.4	--	--	--	0.0	5.6	5.6	90.3	7.8	98.2	3.5	19.7	23.2
Nearshore	0.0	0.1	0.1	--	--	--	--	--	--	--	0.2	0.2	3.5	19.7	23.2
Blue rockfish	--	--	--	--	--	--	--	--	--	--	--	--	3.2	5.9	9.1
Remaining nearshore rockfish	0.0	0.1	0.1	--	--	--	--	--	--	--	0.2	0.2	0.3	13.8	14.1

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal place.

Table 16 (continued).

	LE bottom trawl			California halibut			Pink shrimp			Non-nearshore fixed gear			Nearshore fixed gear		
	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total
Non-rebuilding species (cont.)															
Minor rockfish (North of 40°10' N. lat.) (cont.)															
Shelf	6.8	31.4	38.2	--	--	--	--	3.6	3.6	1.8	1.0	2.7	0.0	0.0	0.0
Bocaccio	0.1	0.1	0.2	--	--	--	--	--	--	--	--	--	--	--	--
Chilipepper rockfish	2.3	1.9	4.2	--	--	--	--	--	--	0.3	--	0.3	--	0.0	0.0
Greenspotted rockfish	0.0	0.0	0.1	--	--	--	--	0.0	0.0	0.0	0.1	0.1	--	0.0	0.0
Greenstriped rockfish	3.0	14.5	17.5	--	--	--	--	1.0	1.0	0.0	0.6	0.6	--	--	--
Redstripe rockfish	0.3	0.6	1.0	--	--	--	--	0.0	0.0	--	--	--	--	--	--
Silvergray rockfish	0.2	0.2	0.5	--	--	--	--	--	--	0.2	--	0.2	0.0	--	0.0
Remaining shelf rockfish	0.7	14.1	14.8	--	--	--	--	2.6	2.6	1.3	0.3	1.7	--	--	--
Slope	113.5	245.6	359.1	--	--	--	--	2.0	2.0	88.5	6.7	95.2	--	0.0	0.0
Sharpchin rockfish	1.1	6.2	7.3	--	--	--	--	0.0	0.0	--	--	--	--	--	--
Splitnose rockfish	6.6	78.1	84.7	--	--	--	--	1.7	1.7	1.2	0.1	1.3	--	0.0	0.0
Yellowmouth rockfish	2.3	0.1	2.5	--	--	--	--	--	--	0.3	0.0	0.4	--	--	--
Remaining slope rockfish	103.4	161.2	264.6	--	--	--	--	0.3	0.3	87.0	6.6	93.6	--	--	--
Unspecified rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Minor rockfish (South of 40°10' N. lat.)	120.1	28.3	148.4	0.0	--	0.0	--	--	--	94.7	3.6	98.3	86.0	6.5	92.5
Nearshore	0.1	0.0	0.1	0.0	--	0.0	--	--	--	--	--	--	83.5	6.1	89.6
Blue rockfish	--	--	--	--	--	--	--	--	--	--	--	--	0.5	2.8	3.3
Gopher rockfish	--	--	--	--	--	--	--	--	--	--	--	--	24.1	2.3	26.4
Remaining nearshore rockfish	0.1	--	0.1	0.0	--	0.0	--	--	--	--	--	--	58.9	1.1	59.9
Shelf	2.3	12.3	14.6	0.0	--	0.0	--	--	--	7.7	0.1	7.9	--	0.4	0.4
Greenspotted rockfish	0.2	0.1	0.3	--	--	--	--	--	--	0.6	0.0	0.6	--	0.0	0.0
Greenstriped rockfish	0.0	1.2	1.2	--	--	--	--	--	--	0.1	0.1	0.2	--	0.0	0.0
Yellowtail rockfish	0.4	0.0	0.4	--	--	--	--	--	--	0.6	--	0.6	--	0.4	0.4
Remaining shelf rockfish	1.7	11.0	12.7	0.0	--	0.0	--	--	--	6.5	0.1	6.5	--	--	--
Slope	117.7	16.0	133.7	0.0	--	0.0	--	--	--	86.9	3.5	90.4	2.5	--	2.5
Bank rockfish	51.1	0.1	51.1	--	--	--	--	--	--	0.2	--	0.2	0.0	--	0.0
Blackgill rockfish	47.9	0.1	48.0	--	--	--	--	--	--	79.1	3.0	82.1	2.4	--	2.4
Sharpchin rockfish	--	4.8	4.8	--	--	--	--	--	--	--	0.0	0.0	--	--	--
Remaining slope rockfish	18.7	11.0	29.8	0.0	--	0.0	--	--	--	7.6	0.5	8.1	--	--	--
Unspecified rockfish	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Pacific cod (North of 43° N. lat.)	91.2	5.4	96.6	--	--	--	--	--	--	1.2	0.3	1.4	--	--	--
Pacific hake	0.3	936.6	937.0	--	--	--	--	1937.1	1937.1	0.4	1.5	1.9	--	--	--
Petrale sole	1695.0	208.5	1903.5	0.1	--	0.1	0.0	0.3	0.3	0.1	0.1	0.2	--	--	--
Sablefish (North of 36° N. lat.)	2988.7	160.2	3148.9	--	--	--	0.1	0.8	0.9	2699.1	72.4	2771.5	--	--	--
Sablefish (South of 36° N. lat.)	19.5	0.0	19.6	--	--	--	--	--	--	634.3	15.0	649.3	--	--	--

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal place.

Table 16 (continued).

	LE bottom trawl			California halibut			Pink shrimp			Non-nearshore fixed gear			Nearshore fixed gear		
	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total	Landed	Discard	Total
Non-rebuilding species (cont.)															
Shortbelly rockfish	0.0	8.0	8.0	--	--	--	--	--	--	--	--	--	0.0	--	0.0
Splitnose rockfish (South of 40°10' N. lat.)	50.9	142.8	193.7	--	--	--	--	--	--	0.2	0.1	0.3	--	--	--
Starry flounder	17.6	2.1	19.8	3.2	0.8	4.0	--	0.0	0.0	0.0	--	0.0	0.1	--	0.1
Thornyheads	2462.0	625.8	3087.9	--	--	--	--	0.4	0.4	203.1	29.4	232.5	0.2	0.0	0.2
Longspine thornyhead (North of 34°27' N. lat.)	1119.4	446.2	1565.5	--	--	--	--	--	--	0.8	0.2	1.0	--	--	--
Longspine thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	15.1	4.6	19.7	--	0.0	0.0
Shortspine thornyhead (North of 34°27' N. lat.)	1341.7	133.3	1475.0	--	--	--	--	0.4	0.4	34.5	7.7	42.1	0.2	--	0.2
Shortspine thornyhead (South of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	151.5	15.3	166.8	--	--	--
Mixed thornyheads	1.0	46.3	47.3	--	--	--	--	--	--	1.2	1.7	2.9	--	0.0	0.0
Yellowtail rockfish (North of 40°10' N. lat.)	11.5	9.8	21.3	--	--	--	--	0.3	0.3	0.1	0.4	0.5	0.5	0.7	1.2
Non-groundfish species															
California halibut	48.3	0.1	48.4	81.1	7.0	88.1	--	--	--	0.4	--	0.4	1.4	2.6	4.0
Dungeness crab	0.0	180.3	180.3	--	159.9	159.9	--	0.2	0.2	1.2	0.1	1.3	6.3	2.7	9.0
Eulachon	0.0	0.0	0.0	--	--	--	--	10.8	10.8	--	--	--	--	--	--
Other non-FMP flatfish	0.0	69.8	69.8	0.3	0.9	1.2	--	67.3	67.3	--	0.1	0.1	0.0	--	0.0
Other non-FMP skate	0.1	138.8	138.9	--	--	--	--	0.0	0.0	--	7.7	7.7	--	--	--
Tanner crab	0	507.0	507.0	--	--	--	--	--	--	0.0	1.6	1.6	--	--	--

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.0 when a value is smaller than one decimal place.

Table 17. Catch (mt), estimated discard (mt), and total fishing mortality (mt) of major U.S. west coast groundfish species in the 2009 at-sea and shoreside Pacific hake/whiting fisheries by sector. These fisheries take place north of the groundfish management line at 40° 10' N latitude.

NORTH of 40°10' N Lat.	Catcher-Processor			Mothership			Tribal			All At-Sea Hake Fisheries	Non-Tribal Shoreside Hake[1]
	Retained	Discard	Total	Retained	Discard	Total	Retained	Discard	Total	Total	Total
Rebuilding species											
Bocaccio (South of 40°10' N. lat.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Canary rockfish	0.10	0.13	0.23	0.35	0.26	0.61	1.72	--	1.72	2.55	1.78
Cowcod (South of 40°10' N. lat.)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Darkblotched rockfish	0.03	0.08	0.11	0.10	0.11	0.20	0.00	--	0.00	0.31	0.60
Pacific ocean perch (North of 40°10' N. lat.)	0.05	0.02	0.06	0.82	0.59	1.41	0.07	0.01	0.09	1.56	17.14
Widow rockfish	0.23	0.73	0.96	10.72	14.25	24.97	0.09	0.01	0.10	26.04	102.67
Yelloweye rockfish	--	--	--	--	--	--	0.00	--	0.00	0.00	0.00
Non-rebuilding species											
Arrowtooth flounder	0.13	0.13	0.26	0.85	0.56	1.41	--	0.85	0.85	2.52	2.34
Black rockfish (North of 46°16' N. lat.)	--	--	--	--	--	--	--	--	--	--	--
Black rockfish (South of 46°16' N. lat.)	--	--	--	--	--	--	--	--	--	--	--
Cabezon (South of 42° N. lat.)	--	--	--	--	--	--	--	--	--	--	--
Dover sole	0.01	0.01	0.02	--	--	--	--	0.10	0.10	0.12	0.01
English sole	--	--	--	--	--	--	--	0.17	0.17	0.17	0.00
Lingcod (North of 42° N. lat.)	0.01	--	0.01	0.29	0.34	0.63	0.07	1.81	1.88	2.52	0.58
Lingcod (South of 42° N. lat.)	--	--	--	--	--	--	--	--	--	--	0.02
Longnose Skate	--	--	--	--	0.04	0.04	--	0.13	0.13	0.17	0.07
Other flatfish	0.01	0.09	0.10	0.00	0.00	0.00	--	0.37	0.37	0.47	0.12
Other groundfish	2.14	25.85	27.99	1.53	5.32	6.85	--	128.79	128.79	163.64	16.37
Big skate	--	--	--	--	0.05	0.05	--	0.05	0.05	0.10	0.00
Cabezon (Oregon)	--	--	--	--	--	--	--	--	--	--	--
Kelp greenling	--	--	--	--	--	--	--	--	--	--	--
Other Skates	--	--	--	--	--	--	--	0.01	0.01	0.01	0.16
Spiny dogfish	2.08	25.84	27.91	1.53	5.27	6.80	--	128.64	128.64	163.36	16.04
Unspecified grenadiers	--	--	--	--	--	--	--	--	--	--	--
Other	0.06	0.02	0.08	--	0.00	0.00	--	0.10	0.10	0.18	0.17
Minor rockfish (North of 40°10' N. lat.)	6.99	1.54	8.53	0.51	0.32	0.83	1.11	0.14	1.25	10.60	7.45
Nearshore	--	--	--	--	--	--	--	--	--	--	--
Blue rockfish	--	--	--	--	--	--	--	--	--	--	--
Remaining nearshore rockfish	--	--	--	--	--	--	--	--	--	--	--

[1] Non-Tribal Shoreside Hake does not include estimates of catch that was discarded at-sea. Shoreside hake tribal landings are summarized in Table 19 under WA Tribal Landings.

Note: A value is (--) when the species was neither caught nor discarded (no value) or not reported for inclusion. Values appear as 0.00 when a value is smaller than two decimal places.

Table 17 (continued).

NORTH of 40°10' N Lat.	Catcher-Processor			Mothership			Tribal			All At-Sea Hake Fisheries	Non-Tribal Shoreside Hake[1]
	Retained	Discard	Total	Retained	Discard	Total	Retained	Discard	Total	Total	Total
Minor rockfish (North of 40°10' N. lat.) (cont.)											
Shelf	0.04	0.01	0.06	0.22	0.21	0.43	0.50	0.09	0.59	1.08	2.53
Bocaccio	0.04	0.01	0.05	0.20	0.17	0.37	0.50	0.09	0.59	1.02	0.01
Chilipepper rockfish	--	--	--	--	0.01	0.01	--	--	--	0.01	2.45
Greenspotted rockfish	--	--	--	--	--	--	--	--	--	--	--
Greenstriped rockfish	--	--	--	--	--	--	--	--	--	--	--
Redstripe rockfish	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.01	--
Silvergray rockfish	--	--	--	0.02	0.03	0.04	--	--	--	0.04	--
Remaining shelf rockfish	--	--	--	--	--	--	--	--	--	--	0.06
Slope	6.94	1.53	8.47	0.28	0.11	0.40	0.61	0.05	0.66	9.53	4.92
Sharpchin rockfish	--	--	--	--	--	--	--	--	--	--	0.07
Splitnose rockfish	0.02	0.06	0.08	--	0.01	0.01	--	0.00	0.00	0.09	0.77
Yellowmouth rockfish	--	--	--	0.00	0.00	0.00	--	--	--	0.00	--
Remaining slope rockfish	6.93	1.46	8.39	0.28	0.10	0.38	0.61	0.05	0.66	9.43	4.08
Pacific cod (North of 43° N. lat.)	--	--	--	--	--	--	--	0.52	0.52	0.52	0.01
Pacific hake	34551.92	0.00	34551.92	24044.03	0.00	24044.03	13452.66	0.00	13452.66	72048.62	38276.43
Petrale sole	--	--	--	--	--	--	--	--	--	--	0.02
Sablefish (North of 36° N. lat.)	0.17	--	0.17	0.00	0.01	0.01	0.02	--	0.02	0.20	21.59
Shortbelly rockfish	--	--	--	--	--	--	--	--	--	--	0.05
Starry flounder	--	--	--	--	--	--	--	--	--	--	0.00
Thornyheads	0.12	0.26	0.38	--	--	--	0.01	0.11	0.12	0.50	0.07
Longspine thornyhead (North of 34°27' N. lat.)	--	--	--	--	--	--	--	--	--	--	0.00
Shortspine thornyhead (North of 34°27' N. lat.)	0.12	0.26	0.38	--	--	--	0.01	0.11	0.12	0.50	0.07
Mixed thornyheads	--	--	--	--	--	--	--	0.00	0.00	0.00	0.00
Yellowtail rockfish (North of 40°10' N. lat.)	3.92	3.83	7.74	76.49	85.79	162.29	6.15	0.77	6.92	176.95	65.66
Non-groundfish species											
California halibut	--	--	--	--	--	--	--	--	--	--	--
Dungeness crab	--	--	--	--	--	--	--	--	--	--	0.02
Eulachon	0.00	0.00	0.00	--	0.00	0.00	--	0.00	0.00	0.00	--
Other non-FMP flatfish	--	--	--	--	--	--	--	--	--	--	--
Tanner crab	--	--	--	--	--	--	--	--	--	--	--

[1] Non-Tribal Shoreside Hake does not include estimates of catch that was discarded at-sea. Shoreside hake tribal landings are summarized in Table 19 under WA Tribal Landings.

Note: A value is (--) when the species was neither caught nor discarded (no value) or not reported for inclusion. Values appear as 0.00 when a value is smaller than two decimal places.

Table 18. Incidential landings (mt) of groundfish by shoreside commercial fisheries in 2009 by sector and gear group. Gear group abbreviations are those used in the PacFIN database; HKL is hook-and-line gear, MSC is miscellaneous gear, NET is net gear POT is pot gear, TLS is troll gear, TWL is trawl gear, and TWS is shrimp trawl gear. Pacific halibut (PHLB) derby fishing is managed under the IPHC and fished with hook-and-line gear. Trawl exempted fishing permit (EFP) fishing is under groundfish management.

	Shoreside Commercial Fisheries									Total incidental fisheries landings
	EFP Non-Midwater Trawl	PHLB Derby	Other Fisheries By Gear Group							
			HKL	MSC	NET	POT	TLS	TWL	TWS	
Rebuilding species										
Bocaccio (South of 40°10' N. lat.)	--	--	0.07	--	0.05	--	0.03	--	--	0.15
Canary rockfish	--	0.00	--	--	--	--	--	--	--	0.00
Cowcod (South of 40°10' N. lat.)	--	--	--	--	--	--	--	--	--	--
Darkblotched rockfish	0.01	0.04	--	--	--	--	--	--	--	0.06
Pacific ocean perch (North of 40°10' N. lat.)	--	0.00	--	--	--	--	--	--	--	0.00
Widow rockfish	--	0.00	0.14	--	0.21	--	--	--	--	0.36
Yelloweye rockfish	--	0.37	--	--	--	--	--	--	--	0.37
Non-rebuilding species	--	--	--	--	--	--	--	--	--	
Arrowtooth flounder	0.15	1.06	--	--	--	--	--	0.35	--	1.56
Black rockfish (North of 46°16' N. lat.)	--	--	--	--	--	--	--	--	--	--
Black rockfish (South of 46°16' N. lat.)	--	--	--	--	--	--	0.04	--	--	0.04
Cabezon (South of 42° N. lat.)	--	--	--	0.01	0.02	--	--	--	--	0.03
California scorpionfish (South of 34°27' N. lat.)	--	--	--	--	0.13	--	--	0.00	0.27	0.40
Chilipepper rockfish (South of 40°10' N. lat.)	--	--	0.03	--	--	--	0.03	--	--	0.05
Dover sole	1.65	0.07	--	--	0.04	--	4.18	0.43	0.08	6.46
English sole	0.08	--	--	--	0.00	--	0.01	0.19	0.05	0.34
Lingcod (North of 42° N. lat.)	0.04	1.30	0.21	--	--	--	1.24	--	--	2.79
Lingcod (South of 42° N. lat.)	--	0.01	0.35	0.01	0.01	0.14	0.00	--	--	0.52
Longnose Skate	0.14	1.11	--	--	0.00	--	--	--	--	1.25
Other flatfish	1.36	--	0.11	--	0.07	--	0.08	0.08	13.03	14.73
Other groundfish	0.78	3.87	0.18	0.00	10.31	0.00	0.02	1.19	3.23	19.58
Big skate	--	--	--	--	0.00	--	--	--	0.00	0.01
Cabezon (Oregon)	--	--	--	--	--	--	--	--	--	--
Kelp greenling	--	--	--	--	--	--	--	--	--	--
Other Skates	0.64	3.27	0.17	--	10.10	--	0.02	1.19	3.19	18.59
Spiny dogfish	0.15	0.59	0.01	--	0.20	--	--	--	0.03	0.98
Unspecified grenadiers	--	--	--	--	--	--	--	--	--	--
Other	0.02	--	0.13	--	4.63	0.00	0.00	--	0.01	4.81

Note: A value is (--) when the species was not landed (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 18 (continued).

	Shoreside Commercial Fisheries									Total incidental fisheries landings
	EFP Non-Midwater Trawl	PHLB Derby	Other Fisheries By Gear Group							
			HKL	MSC	NET	POT	TLS	TWL	TWS	
Non-rebuilding species (cont.)										
Minor rockfish (North of 40°10' N. lat.)										
Nearshore	--	--	--	--	--	--	--	--	--	--
Blue rockfish	--	--	--	--	--	--	--	--	--	--
Remaining nearshore rockfish	--	--	--	--	--	--	--	--	--	--
Shelf	0.00	0.43	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.51
Bocaccio	--	--	--	--	--	--	--	--	--	--
Chilipepper rockfish	0.00	0.29	--	--	--	--	--	--	--	0.29
Greenspotted rockfish	--	0.01	--	--	--	--	--	--	--	0.01
Greenstriped rockfish	--	0.01	--	--	--	--	--	--	--	0.01
Redstripe rockfish	0.00	--	--	--	--	--	--	--	--	0.00
Silvergray rockfish	0.00	0.05	--	--	--	--	--	--	--	0.05
Remaining shelf rockfish	0.00	0.07	--	--	--	--	0.08	--	--	0.15
Slope	0.00	2.73	0.00	0.00	0.00	0.01	0.02	0.00	0.00	2.77
Sharpchin rockfish	0.00	--	--	--	--	--	--	--	--	0.00
Splitnose rockfish	--	0.00	--	--	--	--	--	--	--	0.00
Yellowmouth rockfish	--	0.00	--	--	--	--	--	--	--	0.00
Remaining slope rockfish	--	2.73	0.00	--	--	0.01	0.02	--	--	2.76
Minor rockfish (South of 40°10' N. lat.)										
Nearshore	0.00	0.00	0.00	0.17	0.00	0.00	0.01	0.00	0.00	0.19
Blue rockfish	--	--	--	0.00	--	--	0.00	--	--	0.01
Gopher rockfish	--	--	--	0.01	0.00	--	0.00	--	--	0.02
Remaining nearshore rockfish	--	--	--	0.15	--	--	0.01	--	--	0.16
Shelf	0.09	0.00	1.55	0.01	0.02	0.02	0.01	0.00	0.06	1.75
Greenspotted rockfish	--	--	0.04	--	--	--	--	--	--	0.04
Greenstriped rockfish	--	--	--	--	--	--	--	--	--	--
Yellowtail rockfish	--	--	--	--	--	--	--	--	--	--
Remaining shelf rockfish	0.09	--	1.51	0.01	0.02	0.02	0.01	--	0.06	1.71
Slope	3.13	0.00	0.07	0.00	0.14	0.02	0.00	0.00	0.06	3.43
Bank rockfish	--	--	--	--	0.14	--	--	--	--	0.14
Blackgill rockfish	2.99	--	0.01	--	--	0.02	--	--	--	3.03
Sharpchin rockfish	--	--	--	--	--	--	--	--	--	--
Remaining slope rockfish	0.14	--	0.06	--	0.01	--	--	--	0.06	0.27

Note: A value is (--) when the species was not landed (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 18 (continued).

	Shoreside Commercial Fisheries									Total incidental fisheries landings
	EFP Non-Midwater Trawl	PHLB Derby	Other Fisheries By Gear Group							
			HKL	MSC	NET	POT	TLS	TWL	TWS	
Non-rebuilding species (cont.)										
Pacific cod (North of 43° N. lat.)	0.02	0.06	--	--	--	--	--	1.96	--	2.04
Pacific hake	--	--	--	--	0.00	--	--	--	--	0.00
Petrale sole	1.03	0.02	--	--	0.00	--	0.01	0.27	--	1.33
Sablefish (North of 36° N. lat.)	0.00	32.87	--	--	0.24	--	0.94	0.01	--	34.05
Sablefish (South of 36° N. lat.)	105.50	--	--	--	--	--	--	--	--	105.50
Shortbelly rockfish	--	--	--	--	--	--	--	--	--	--
Splitnose rockfish (South of 40°10' N. lat.)	0.00	--	--	--	--	--	0.11	--	--	0.11
Starry flounder	0.05	--	0.00	--	--	--	--	0.06	0.45	0.57
Thornyheads	3.16	0.31	0.14	0.00	0.00	0.00	4.05	0.00	0.00	7.66
Longspine thornyhead (North of 34°27' N. lat.)	0.01	--	--	--	--	--	3.32	--	--	3.32
Longspine thornyhead (South of 34°27' N. lat.)	--	--	0.03	--	--	--	--	--	--	0.03
Shortspine thornyhead (North of 34°27' N. lat.)	3.15	0.31	--	--	--	--	0.74	--	--	4.20
Shortspine thornyhead (South of 34°27' N. lat.)	--	--	0.11	--	--	--	--	--	--	0.11
Mixed thornyheads	--	--	--	--	--	--	--	--	--	--
Yellowtail rockfish (North of 40°10' N. lat.)	--	0.01	0.00	--	--	--	0.47	--	--	0.49
Non-groundfish species										
California halibut	--	--	77.99	0.00	56.61	0.07	0.42	4.32	13.67	153.07
Dungeness crab	0.01	--	--	11.77	0.00	21247.25	0.02	--	--	21259.05
Eulachon	--	--	--	--	--	--	--	--	--	--
Other non-FMP flatfish	--	--	--	--	0.00	--	--	0.01	--	0.01
Tanner crab	0.00	--	--	--	--	0.00	--	--	--	0.01

Note: A value is (--) when the species was not landed (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 19. Estimated total fishing mortality (mt) of major U.S. west coast groundfish species in 2009 by sector.

	Shoreside commercial fisheries								Total recreational fishing mortality					
	LE bottom trawl	CA halibut	Pink shrimp	Non-nearshore fixed gear	Nearshore fixed gear	Non-tribal shoreside hake[1]	WA tribal landings	All at-sea hake fisheries	WA	OR	CA	Research	Remaining incidental fisheries landings	Estimated total fishing mortality
Rebuilding species														
Bocaccio (South of 40°10' N. lat.)	20.4	--	--	1.6	1.0	--	NA	NA	NA	NA	46.4	1.0	0.1	70.6
Canary rockfish	8.9	--	0.0	0.3	3.5	1.8	5.9	2.6	0.5	3.0	11.2	0.5	0.0	38.1
Cowcod (South of 40°10' N. lat.)	0.5	--	--	0.1	0.0	--	NA	NA	NA	NA	0.2	0.1	--	0.9
Darkblotched rockfish	272.4	--	18.3	8.0	0.1	0.6	0.0	0.3	--	--	--	1.5	0.1	301.2
Pacific ocean perch (North of 40°10' N. lat.)	157.7	--	0.4	0.5	--	17.1	0.5	1.6	--	--	--	2.7	0.0	180.5
Widow rockfish	28.5	--	0.0	0.3	0.0	102.7	29.5	26.0	0.0	0.4	1.5	5.3	0.4	194.6
Yelloweye rockfish	0.1	--	--	1.3	0.5	0.0	0.3	0.0	1.6	2.0	3.8	0.7	0.4	10.7
Non-rebuilding species														
Arrowtooth flounder	5314.6	--	20.8	83.4	0.0	2.3	10.5	2.5	--	0.0	--	7.7	1.6	5443.5
Black rockfish (North of 46°16' N. lat.)	0.1	--	--	--	--	--	0.0	--	206.7	NA	NA	0.0	--	206.8
Black rockfish (South of 46°16' N. lat.)	0.5	--	--	--	230.7	--	--	--	NA	309.0	243.7	0.0	0.0	783.9
Cabezon (South of 42° N. lat.)	--	--	--	--	18.7	--	--	--	NA	NA	32.4	0.0	0.0	51.1
California scorpionfish (South of 34°27' N. lat.)	--	0.0	--	--	3.1	--	--	NA	NA	NA	66.7	0.0	0.4	70.2
Chilipepper rockfish (South of 40°10' N. lat.)	304.3	--	--	0.5	0.1	--	--	NA	NA	NA	2.1	3.6	0.1	310.8
Dover sole	12361.4	--	6.6	11.4	0.0	0.0	130.7	0.1	--	0.0	--	29.4	6.5	12546.2
English sole	404.7	0.5	1.1	--	--	0.0	91.3	0.2	--	--	--	2.4	0.3	500.6
Lingcod (North of 42° N. lat.)	127.0	--	0.4	34.2	28.2	0.6	46.1	2.5	54.1	75.5	NA	1.3	2.8	372.7
Lingcod (South of 42° N. lat.)	39.1	0.0	0.1	17.6	20.1	0.0	--	--	--	NA	129.6	1.1	0.5	208.1
Longnose Skate	1275.4	--	2.1	173.3	0.0	0.1	--	0.2	--	--	--	2.8	1.3	1455.1
Other flatfish	1449.0	3.4	31.3	1.6	0.8	0.1	45.4	0.5	1.9	0.3	--	15.7	14.7	1564.7
Other groundfish	1609.8	64.8	0.6	299.3	54.4	16.4	184.5	163.6	7.8	41.4	20.1	27.2	24.4	2514.3
Big skate	78.6	21.8	--	5.8	--	0.0	--	0.1	--	0.0	--	0.3	0.0	106.5
Cabezon (Oregon)	0.1	--	0.0	--	30.3	--	--	--	5.4	18.6	NA	0.0	--	54.4
Kelp greenling	0.0	--	--	--	23.1	--	--	--	1.5	22.7	15.2	0.0	--	62.6
Other Skates	496.5	35.5	--	27.5	0.0	0.2	45.0	0.0	0.9	--	0.0	--	18.6	624.0
Spiny dogfish	665.5	3.2	0.4	216.2	0.0	16.0	125.4	163.4	--	0.1	4.9	10.9	1.0	1206.9
Unspecified grenadiers	203.6	--	--	44.4	--	--	--	--	--	--	0.0	--	--	248.0
Other	165.5	4.4	0.2	5.5	0.9	0.2	14.1	0.2	--	0.0	0.0	16.0	4.8	211.7
Minor rockfish (North of 40°10' N. lat.)	397.4	0.0	5.6	98.2	23.2	7.5	44.6	10.6	5.4	33.2	15.9	8.3	3.3	653.1
Nearshore	0.1	0.0	0.0	0.2	23.2	0.0	0.1	0.0	3.8	28.7	6.8	0.1	--	63.0
Blue rockfish	--	--	--	--	9.1	--	--	--	0.7	16.8	3.2	0.0	--	29.7
Remaining nearshore rockfish	0.1	--	--	0.2	14.1	--	0.1	--	3.1	11.9	3.6	0.1	--	33.3

[1] Non-Tribal Shoreside Hake does not include estimates of catch that was discarded at-sea.

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 19 (continued).

	Shoreside commercial fisheries						WA tribal landings	All at-sea hake fisheries	Total recreational fishing mortality			Research	Remaining incidental fisheries landings	Estimated total fishing mortality
	LE bottom trawl	CA halibut	Pink shrimp	Non-nearshore fixed gear	Nearshore fixed gear	Non-tribal shoreside hake[1]			WA	OR	CA			
Non-rebuilding species (cont.)														
Minor rockfish (North of 40°10' N. lat.) (cont.)														
Shelf	38.2	0.0	3.6	2.7	0.0	2.5	4.7	1.1	1.6	4.5	9.1	1.3	0.5	69.9
Bocaccio	0.2	--	--	--	--	0.0	--	1.0	1.2	0.1	--	0.0	--	2.5
Chilipepper rockfish	4.2	--	--	0.3	0.0	2.5	--	0.0	--	0.0	--	0.2	0.3	7.4
Greenspotted rockfish	0.1	--	0.0	0.1	0.0	--	--	--	--	--	--	0.0	0.0	0.2
Greenstriped rockfish	17.5	--	1.0	0.6	--	--	--	--	--	0.0	--	0.0	0.0	19.1
Redstripe rockfish	1.0	--	0.0	--	--	--	2.6	0.0	--	--	--	0.6	0.0	4.2
Silvergray rockfish	0.5	--	--	0.2	0.0	--		0.0	--	0.0	--	0.1	0.0	0.9
Remaining shelf rockfish	14.8	--	2.6	1.7	--	0.1	2.1	--	0.5	4.3	9.1	0.4	0.1	35.7
Slope	359.1	0.0	2.0	95.2	0.0	4.9	39.7	9.5	0.0	0.0	0.0	3.7	2.8	517.0
Sharpchin rockfish	7.3	--	0.0	--	--	0.1	0.0	--	--	--	--	0.9	0.0	8.3
Splitnose rockfish	84.7	--	1.7	1.3	0.0	0.8	0.0	0.1	--	--	--	2.6	0.0	91.2
Yellowmouth rockfish	2.5	--	--	0.4	--	--		0.0	--	--	--	0.0	0.0	2.8
Remaining slope rockfish	264.6	--	0.3	93.6	--	4.1	39.7	9.4	--	--	--	0.2	2.8	414.6
Unspecified rockfish	--	--	--	--	--	--	--	--	--	--	--	3.2	--	3.2
Minor rockfish (South of 40°10' N. lat.)	148.4	0.0	0.0	98.3	92.5	0.0	0.0	0.0	0.0	0.0	544.0	8.2	5.4	896.8
Nearshore	0.1	0.0	0.0	0.0	89.6	--	--	NA	NA	NA	297.9	0.2	0.2	388.0
Blue rockfish	--	--	--	--	3.3	--	--	NA	NA	NA	41.6	0.0	0.0	44.9
Gopher rockfish	--	--	--	--	26.4	--	--	NA	NA	NA	59.5	0.0	0.0	85.9
Remaining nearshore rockfish	0.1	0.0	--	--	59.9	--	--	NA	NA	NA	196.9	0.2	0.2	257.2
Shelf	14.6	0.0	0.0	7.9	0.4	0.0	0.0	0.0	0.0	0.0	246.1	2.3	1.7	273.0
Greenspotted rockfish	0.3	--	--	0.6	0.0	--	--	NA	NA	NA	--	0.1	0.0	1.1
Greenstriped rockfish	1.2	--	--	0.2	0.0	--	--	NA	NA	NA	1.7	0.0	--	3.1
Yellowtail rockfish	0.4	--	--	0.6	0.4	--	--	NA	NA	NA	48.9	0.3	--	50.6
Remaining shelf rockfish	12.7	0.0	--	6.5	--	--	--	NA	NA	NA	195.5	1.8	1.7	218.2
Slope	133.7	0.0	0.0	90.5	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.4	230.6
Bank rockfish	51.1	--	--	0.2	0.0	--	--	NA	NA	NA	0.0	0.1	0.1	51.6
Blackgill rockfish	48.0	--	--	82.1	2.4	--	--	NA	NA	NA	--	0.4	3.0	136.0
Sharpchin rockfish	4.8	--	--	0.0	--	--	--	NA	NA	NA	--	0.1	--	4.9
Remaining slope rockfish	29.8	0.0	--	8.1	--	--	--	NA	NA	NA	--	0.0	0.3	38.1
Unspecified rockfish	--	--	--	--	--	--	--	--	--	--	--	5.3	--	5.3
Pacific cod (North of 43° N. lat.)	96.6	--	--	1.4	--	0.0	147.1	0.5	0.1	0.0	NA	0.1	2.0	248.0
Pacific hake	937.0	--	1937.1	1.9	--	38276.4	8928.8	72048.6	--	0.0	0.1	34.7	0.0	122164.7
Petrale sole	1903.5	0.1	0.3	0.2	--	0.0	69.4	--	--	0.0	0.6	2.1	1.3	1977.6

[1] Non-Tribal Shoreside Hake does not include estimates of catch that was discarded at-sea.

Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 19 (continued).

	Shoreside commercial fisheries						WA tribal landings	All at-sea hake fisheries	Total recreational fishing mortality			Research	Remaining incidental fisheries landings	Estimated total fishing mortality
	LE bottom trawl	CA halibut	Pink shrimp	Non-nearshore fixed gear	Nearshore fixed gear	Non-tribal shoreside hake[1]			WA	OR	CA			
Non-rebuilding species (cont.)														
Sablefish (North of 36° N. lat.)	3148.9	--	0.9	2771.5	--	21.6	636.6	0.2	--	0.5	0.0	10.6	34.1	6624.8
Sablefish (South of 36° N. lat.)	19.6	--	--	649.3	--	--	--	NA	--	NA	0.0	1.7	105.5	776.1
Shortbelly rockfish	8.0	--	--	--	0.0	0.0	--	--	--	--	--	1.1	--	9.2
Splitnose rockfish (South of 40°10' N. lat.)	193.7	--	--	0.3	--	--	--	NA	--	NA	--	9.3	0.1	203.4
Starry flounder	19.8	4.0	0.0	0.0	0.1	0.0	0.0	--	--	3.0	0.8	0.0	0.6	28.2
Thornyheads	3087.9	0.0	0.4	232.5	0.2	0.1	30.7	0.5	0.0	0.0	0.0	16.9	7.7	3376.9
Longspine thornyhead (North of 34°27' N. lat.)	1565.5	--	--	1.0	--	0.0	0.0	--	--	--	--	11.7	3.3	1581.6
Longspine thornyhead (South of 34°27' N. lat.)		--	--	19.7	0.0	--	--	NA	--	NA	--	0.8	0.0	20.5
Shortspine thornyhead (North of 34°27' N. lat.)	1475.0	--	0.4	42.1	0.2	0.1	30.7	0.5	--	--	--	3.8	4.2	1557.1
Shortspine thornyhead (South of 34°27' N. lat.)		--	--	166.8	--	--	--	NA	--	NA	--	0.6	0.1	167.5
Mixed thornyheads	47.3	--	--	2.9	0.0	0.0	--	0.0	--	--	--	--	--	50.2
Yellowtail rockfish (North of 40°10' N. lat.)	21.3	--	0.3	0.5	1.2	65.7	449.3	177.0	23.7	9.3	1.0	1.4	0.5	751.1
Non-groundfish species														
California halibut	48.4	88.1	--	0.4	4.0	--	--	--	--	--	235.0	--	153.1	529.0
Dungeness crab	180.3	159.9	0.2	1.3	9.0	0.0	879.1	--	--	--	--	--	21259.1	22489.0
Eulachon	0.0	--	10.8	--	--	--	--	0.0	--	0.0	--	--	--	10.8
Other non-FMP flatfish	69.8	1.2	67.3	0.1	0.0	--	--	--	--	--	--	--	0.0	138.5
Other non-FMP skate	138.9	--	0.0	7.7	--	--	--	--	--	--	--	--		146.6
Tanner crab	507.0	--	--	1.6	--	--	--	--	--	--	--	--	0.0	508.6

[1] Non-Tribal Shoreside Hake does not include estimates of catch that was discarded at-sea.
Note: A value is (--) when the species was neither caught nor discarded (no value). Values appear as 0.00 when a value is smaller than two decimal places.

Table 20. Estimated total fishing mortality (mt) of major U.S. west coast groundfish species in 2009 and corresponding management reference points (harvest specifications).

	Estimated total fishing mortality (mt)	Management reference points (harvest specifications)			
		Optimum Yield (mt)	Estimated mortality (as % of OY)	Allowable Biological Catch (mt)	Estimated mortality (as % of ABC)
Rebuilding species					
Bocaccio (South of 40°10' N. lat.)	71	288	24%	793	9%
Canary rockfish	38	105	36%	937	4%
Cowcod (South of 40°10' N. lat.)	1	4	23%	13	7%
Darkblotched rockfish	301	285	106%	437	69%
Pacific ocean perch (North of 40°10' N. lat.)	181	189	96%	1160	16%
Widow rockfish	195	522	37%	6950	3%
Yelloweye rockfish	11	17	63%	31	34%
Non-rebuilding species					
Arrowtooth flounder	5443	11267	48%	11267	48%
Black rockfish (North of 46°16' N. lat.)	207	490	42%	490	42%
Black rockfish (South of 46°16' N. lat.)	784	1000	78%	1469	53%
Cabezon (South of 42° N. lat.)	51	69	74%	106	48%
California scorpionfish (South of 34°27' N. lat.)	70	175	40%	175	40%
Chilipepper rockfish (South of 40°10' N. lat.)	311	2885	11%	3037	10%
Dover sole	12546	16500	76%	29453	43%
English sole	501	14326	3%	14326	3%
Lingcod (North of 42° N. lat.)	373	5278	11%	5278	11%
Lingcod (South of 42° N. lat.)	208				
Longnose Skate	1455	1349	108%	3428	42%
Other flatfish	1565	4884	32%	6731	23%
Other groundfish	2514	5600	45%	11200	22%
Big skate	107				
Cabezon (Oregon)	54				
Kelp greenling	63				
Other Skates	624				
Spiny dogfish	1207				
Unspecified grenadiers	248				
Other	212				
Minor rockfish (North of 40°10' N. lat.)	653	2283	29%	3678	18%
Nearshore	63	155	41%		
Blue rockfish	30			**	
Remaining nearshore rockfish	33			**	
Shelf	70	968	7%		
Bocaccio	3			**	
Chilipepper rockfish	7			**	
Greenspotted rockfish	0			**	
Greenstriped rockfish	19			**	
Redstripe rockfish	4			**	
Silvergray rockfish	1			**	
Remaining shelf rockfish	36			**	

** ABCs are not available for these species. ABC values that are listed for these species in other sources represent ABC contributions to the Minor Rockfish ABCs.

Table 20 (continued).

	Estimated total fishing mortality (mt)	Management reference points (harvest specifications)			
		Optimum Yield (mt)	Estimated mortality (as % of OY)	Allowable Biological Catch (mt)	Estimated mortality (as % of ABC)
Non-rebuilding species (cont.)					
Minor rockfish (North of 40°10' N. lat.)					
Slope	517	1160	45%		
Sharpchin rockfish	8			**	
Splitnose rockfish	91			**	
Yellowmouth rockfish	3			**	
Remaining slope rockfish	415			**	
Unspecified remaining rockfish	3				
Minor rockfish (South of 40°10' N. lat.)	897	1990	45%	3384	27%
Nearshore	388	650	60%		
Blue rockfish	45			**	
Gopher rockfish	86			**	
Remaining nearshore rockfish	257			**	
Shelf	273	714	38%		
Greenspotted rockfish	1			**	
Greenstriped rockfish	3			**	
Yellowtail rockfish	51			**	
Remaining shelf rockfish	218			**	
Slope	231	626	37%		
Bank rockfish	52			**	
Blackgill rockfish	136			**	
Sharpchin rockfish	5			**	
Remaining slope rockfish	38			**	
Unspecified remaining rockfish	5				
Pacific cod (North of 43° N. lat.)	248	1600	16%	3200	8%
Pacific hake	122165	135939	90%	187346	65%
Petrale sole	1978	2433	81%	2811	70%
Sablefish (North of 36° N. lat.)	6625	7052	94%	9914	75%
Sablefish (South of 36° N. lat.)	776	1371	57%		
Shortbelly rockfish	9	6950	0%	6950	0%
Splitnose rockfish (South of 40°10' N. lat.)	203	461	44%	615	33%
Starry flounder	28	1004	3%	1509	2%
Thornyheads	3377				
Longspine thornyhead (North of 34°27' N. lat.)	1582	2231	71%	3766	43%
Longspine thornyhead (South of 34°27' N. lat.)	20	395	5%		
Shortspine thornyhead (North of 34°27' N. lat.)	1557	1608	97%	2437	71%
Shortspine thornyhead (South of 34°27' N. lat.)	167	414	40%		
Mixed thornyheads	50				
Yellowtail rockfish (North of 40°10' N. lat.)	751	4562	16%	4562	16%

** ABCs are not available for these species. ABC values that are listed for these species in other sources represent ABC contributions to the Minor Rockfish ABCs.

Appendix A

Common and scientific names of species included in the Pacific Coast Groundfish Fishery Management Plan, as amended through Amendment 19 (PFMC 2008).

Sharks

Big skate, *Raja binoculata*
California skate, *R. inornata*
Leopard shark, *Triakis semifasciata*
Longnose skate, *R. rhina*
Soupfin shark, *Galeorhinus zyopterus*
Spiny dogfish, *Squalus acanthias*

Ratfish

Ratfish, *Hydrolagus colliei*

Morids

Finescale codling, *Antimora microlepis*

Grenadiers

Pacific rattail, *Coryphaenoides acrolepis*

Roundfish

Cabezon, *Scorpaenichthys marmoratus*
Kelp greenling, *Hexagrammos decagrammus*
Lingcod, *Ophiodon elongatus*
Pacific cod, *Gadus macrocephalus*
Pacific whiting, (hake) *Merluccius productus*
Sablefish, *Anoplopoma fimbria*

Flatfish

Arrowtooth flounder, (turbot) *Atheresthes stomias*
Butter sole, *Isopsetta isolepis*
Curlfin sole, *Pleuronichthys decurrens*
Dover sole, *Microstomus pacificus*
English sole, *Parophrys vetulus*
Flathead sole, *Hippoglossoides elassodon*
Pacific sanddab, *Citharichthys sordidus*
Petrale sole, *Eopsetta jordani*
Rex sole, *Glyptocephalus zachirus*
Rock sole, *Lepidopsetta bilineata*
Sand sole, *Psettichthys melanostictus*
Starry flounder, *Platichthys stellatus*

Rockfish

Includes all genera and species of the family Scopaenidae, even if not listed, that occur in the Washington, Oregon, and California area. The Scopaenidae genera are *Sebastes*, *Scorpaena*, *Sebastolobus*, and *Scorpaenodes*.

Aurora, *Sebastes. aurora*
Bank, *S. rufus*
Black, *S. melanops*

Black-and-yellow, *S. chrysolmelas.*
Blackgill, *S. melanostomus*
Blue, *S. mystinus*
Bocaccio, *S. paucispinis*
Bronzespotted, *S. gilli*
Brown, *S. auriculatus*
Calico, *S. dalli*
California scorpionfish, *Scorpaena guttata*
Canary, *Sebastes pinniger*
Chameleon, *S. phillipsi*
Chilipepper, *S. goodei*
China, *S. nebulosus*
Copper, *S. caurinus*
Cowcod, *S. levis*
Darkblotched, *S. crameri*
Dusky, *S. ciliatus*
Dwarf-red, *S. rufianus*
Flag, *S. rubrivinctus*
Freckled, *S. lentiginosus*
Gopher, *S. carnatus*
Grass, *S. rastrelliger*
Greenblotched, *S. rosenblatti*
Greenspotted, *S. chlorostictus*
Greenstriped, *S. elongatus*
Halfbanded, *S. semicinctus*
Harlequin, *S. variegatus*
Honeycomb, *S. umbrosus*
Kelp, *S. atrovirens*
Longspine thornyhead, *Sebastolobus altivelis*
Mexican, *Sebastes. macdonaldi*
Olive, *S. serranoides*
Pink, *S. eos*
Pinkrose, *S. simulator*
Pygmy, *S. wilsoni*
Pacific ocean perch, *S. alutus*
Quillback, *S. maliger*
Redbanded, *S. babcocki*
Redstripe, *S. proriger*
Rosethorn, *S. helvomaculatus*
Rosy, *S. rosaceus*
Rougheye, *S. aleutianus*
Sharpchin, *S. zacentrus*
Shortbelly, *S. jordani*
Shortraker, *S. borealis*
Shortspine thornyhead, *Sebastolobus alascanus*
Silvergray, *Sebastes. brevispinus*
Speckled, *S. ovalis*
Splitnose rockfish, *S. diploproa*
Squarespot, *S. hopkinsi*
Starry, *S. constellatus*
Stripetail, *S. saxicola*
Swordspine, *S. ensifer*

Tiger, *S. nigorcinctus*
Treefish, *S. serriceps*
Vermilion, *S. miniatus*
Widow, *S. entomelas*
Yelloweye, *S. ruberrimus*
Yellowmouth, *S. reedi*
Yellowtail, *S. flavidus*

Appendix B

Species indentification codes used in the Pacific Coast Fisheries Information Network (PacFIN) database and assigned to WCGOP observer data, with aggregated species groups used in this report for the non-nearshore sectors of the groundfish fishery.

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
ALBC	ALBACORE	Other nongroundfish	Other nongroundfish	
AKSK	ALASKA SKATE	Other non-FMP skate	Other non-FMP skate	
AMCK	ATKA MACKEREL	Other nongroundfish	Other nongroundfish	
APLC	ALASKA PLAICE	Other non-FMP flatfish	Other non-FMP flatfish	
ARR1	NOM. AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	yes
ARRA	AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	yes
ART1	NOM. ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	yes
ARTH	ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	yes
ASKT	ALEUTIAN SKATE	Other non-FMP skate	Other non-FMP skate	
ASRK	PACIFIC ANGEL SHARK	Other nongroundfish	Other nongroundfish	
BABL	BLACK ABALONE	Other nongroundfish	Other nongroundfish	
BANK	BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	yes
BCAC	BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	yes
BCC1	NOM. BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	yes
BCLM	BUTTER CLAM	Other nongroundfish	Other nongroundfish	
BGL1	NOM. BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	yes
BHAG	BLACK HAGFISH	Other nongroundfish	Other nongroundfish	
BISC	BROWN IRISH LORD	Other nongroundfish	Other nongroundfish	
BKCR	BLUE KING CRAB	Other nongroundfish	Other nongroundfish	
BLCK	BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLGL	BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	yes
BLK1	NOM. BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLPT	BLACK EELPOUT	Other nongroundfish	Other nongroundfish	
BLSK	BLACK SKATE	Other non-FMP skate	Other non-FMP skate	
BLU1	NOM. BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BLUR	BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BMCK	BULLET MACKEREL	Other nongroundfish	Other nongroundfish	
BMRL	BLUE MARLIN	Other nongroundfish	Other nongroundfish	
BMSL	BLUE OR BAY MUSSEL	Other nongroundfish	Other nongroundfish	
BNK1	NOM. BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	yes
BRNZ	BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
BRW1	NOM. BROWN ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
BRWN	BROWN ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
BRZ1	NOM. BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
BSCL	BUFFALO SCULPIN	Other nongroundfish	Other nongroundfish	
BSJK	BLACK SKIPJACK	Other nongroundfish	Other nongroundfish	
BSKT	BIG SKATE	Big skate	Big skate	yes
BSOL	BUTTER SOLE	Other flatfish	Other flatfish	yes
BSRK	BLUE SHARK	Other nongroundfish	Other nongroundfish	
BSRM	UNSP. BAIT SHRIMP	Other nongroundfish	Other nongroundfish	
BTCR	BAIRDI TANNER CRAB	Tanner crab	Tanner crab	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
BTNA	BLUEFIN TUNA	Other nongroundfish	Other nongroundfish	
BTRY	BAT RAY	Other nongroundfish	Other nongroundfish	
BYEL	BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
BYL1	NOM. BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CBZ1	NOM. CABEZON	Other groundfish	Cabezon	yes
CBZN	CABEZON	Other groundfish	Cabezon	yes
CEEL	SPOTTED CUSK-EEL	Other nongroundfish	Other nongroundfish	
CHL1	NOM. CALIFORNIA HALIBUT	California halibut	California halibut	
CHLB	CALIFORNIA HALIBUT	California halibut	California halibut	
CHN1	NOM. CHINA ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CHNA	CHINA ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CHNK	CHINOOK SALMON	Other nongroundfish	Other nongroundfish	
CHUM	CHUM SALMON	Other nongroundfish	Other nongroundfish	
CKLE	BASKET COCKLE	Other nongroundfish	Other nongroundfish	
CLC1	NOM. CALICO ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CLCO	CALICO ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CLP1	NOM. CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	yes
CLPR	CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	yes
CMCK	CHUB MACKEREL	Other nongroundfish	Other nongroundfish	
CMEL	CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
CML1	NOM. CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
CMSL	CALIFORNIA MUSSEL	Other nongroundfish	Other nongroundfish	
CNR1	NOM. CANARY ROCKFISH	Canary rockfish	Canary rockfish	yes
CNRY	CANARY ROCKFISH	Canary rockfish	Canary rockfish	yes
COHO	COHO SALMON	Other nongroundfish	Other nongroundfish	
COP1	NOM. COPPER ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
COPP	COPPER ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
CPLN	CAPELIN	Other nongroundfish	Other nongroundfish	
CSKT	CALIFORNIA SKATE	California skate	California skate	yes
CSL1	NOM. CURLFIN SOLE	Other flatfish	Other flatfish	yes
CSLK	CALIFORNIA SLICKHEAD	Other nongroundfish	Other nongroundfish	
CSRK	BROWN CAT SHARK	Other nongroundfish	Other nongroundfish	
CSOL	CURLFIN SOLE	Other flatfish	Other flatfish	yes
CTRB	C-O SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
CUDA	PACIFIC BARRACUDA	Other nongroundfish	Other nongroundfish	
CWC1	NOM. COWCOD ROCKFISH	Other shelf rockfish	Cowcod	yes
CWCD	COWCOD ROCKFISH	Other shelf rockfish	Cowcod	yes
DARK	DARK ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
DBR1	NOM. DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	yes
DBRK	DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	yes
DCRB	DUNGENESS CRAB	Dungeness crab	Dungeness crab	
DFLT	UNSP. DEEP FLOUNDERS	Other flatfish	Other flatfish	yes
DOVR	DOVER SOLE	Dover sole	Dover sole	yes
DRDO	DORADO	Other nongroundfish	Other nongroundfish	
DSOL	DEEPSEA SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
DSRK	SPINY DOGFISH	Spiny dogfish	Spiny dogfish	yes
DTRB	DIAMOND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
DUSK	DUSKY ROCKFISH	Other groundfish	Other groundfish	yes
DVR1	NOM. DOVER SOLE	Dover sole	Dover sole	yes
DWRF	DWARF-RED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
EELS	UNSPECIFIED EELS	Other nongroundfish	Other nongroundfish	
EGL1	NOM. ENGLISH SOLE	English sole	English sole	yes
EGLS	ENGLISH SOLE	English sole	English sole	yes
ESTR	EASTERN OYSTER	Other nongroundfish	Other nongroundfish	
ETNA	BIGEYE TUNA	Other nongroundfish	Other nongroundfish	
EULC	EULACHON	Eulachon	Eulachon	
EURO	EUROPEAN OYSTER	Other nongroundfish	Other nongroundfish	
FLAG	FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
FLG1	NOM. FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
FNTS	FANTAIL SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
FRCK	FRECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
FSOL	FLATHEAD SOLE	Other flatfish	Other flatfish	yes
GABL	GREEN ABALONE	Other nongroundfish	Other nongroundfish	
GBAS	GIANT SEA BASS	Other nongroundfish	Other nongroundfish	
GBL1	NOM. GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
GBLC	GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
GCLM	GAPER CLAM	Other nongroundfish	Other nongroundfish	
GDUK	GEODUCK	Other nongroundfish	Other nongroundfish	
GGRD	GIANT GRENADIER	Other nongroundfish	Other nongroundfish	
GKCR	GOLDEN KING CRAB	Other nongroundfish	Other nongroundfish	
GPH1	NOM. GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPHR	GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPRW	GOLDEN PRAWN	Other nongroundfish	Other nongroundfish	
GRAS	GRASS ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
GRDR	UNSP. GRENADIERS	Grenadiers	Grenadiers	yes
GREN	PACIFIC GRENADIER	Grenadiers	Grenadiers	yes
GRS1	NOM. GRASS ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
GSP1	NOM. GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	yes
GSPT	GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	yes
GSQD	GIANT SQUID	Other nongroundfish	Other nongroundfish	
GSR1	NOM. GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	yes
GSRK	GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	yes
GSRM	GHOST SHRIMP	Other nongroundfish	Other nongroundfish	
GSTG	GREEN STURGEON	Other nongroundfish	Other nongroundfish	
GTRB	GREENLAND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
HBRK	HALFBANDED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
HCLM	HORSE CLAMS	Other nongroundfish	Other nongroundfish	
HLQN	HARLEQUIN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
HNY1	NOM. HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
HNYC	HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
HTRB	HORNYHEAD TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
ISRK	BIGEYE THRESHER SHARK	Other nongroundfish	Other nongroundfish	
JCLM	CALIFORNIA JACKKNIFE CLAM	Other nongroundfish	Other nongroundfish	
JMCK	JACK MACKEREL	Other nongroundfish	Other nongroundfish	
KFSH	GIANT KELPFISH	Other nongroundfish	Other nongroundfish	
KGL1	NOM. KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLP1	NOM. KELP ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
KLPG	KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLPR	KELP ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
KMKA	KAMCHATKA FLOUNDER	Other non-FMP flatfish	Other non-FMP flatfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
KSTR	KUMAMOTO OYSTER	Other nongroundfish	Other nongroundfish	
LCD1	NOM. LINGCOD	Lingcod	Lingcod	yes
LCLM	NATIVE LITTLENECK	Other nongroundfish	Other nongroundfish	
LCOD	LINGCOD	Lingcod	Lingcod	yes
LDAB	LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LDB1	NOM. LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LOBS	CALIF. SPINY LOBSTER	Other nongroundfish	Other nongroundfish	
LSKT	LONGNOSE SKATE	Longnose skate	Longnose skate	yes
LSP1	NOM. LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	yes
LSPN	LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	yes
LSRK	LEOPARD SHARK	Other groundfish	Other groundfish	yes
LSTR	OLYMPIA OYSTER	Other nongroundfish	Other nongroundfish	
LUVR	LOUVAR	Other nongroundfish	Other nongroundfish	
MACL	MUD CLAMS	Other nongroundfish	Other nongroundfish	
MAKO	SHORTFIN MAKO SHARK	Other nongroundfish	Other nongroundfish	
MCLM	MANILA CLAM	Other nongroundfish	Other nongroundfish	
MEEL	MONKEYFACE EEL	Other nongroundfish	Other nongroundfish	
MISC	MISC. FISH/ANIMALS	Other nongroundfish	Other nongroundfish	
MOLA	COMMON MOLA	Other nongroundfish	Other nongroundfish	
MRLN	STRIPED MARLIN	Other nongroundfish	Other nongroundfish	
MSC2	MISCELLANEOUS FISH	Other nongroundfish	Other nongroundfish	
MSHP	PLAINFIN MIDSHIPMAN	Other nongroundfish	Other nongroundfish	
MSQD	MARKET SQUID	Other nongroundfish	Other nongroundfish	
MSRM	MUD SHRIMP	Other nongroundfish	Other nongroundfish	
MXR1	NOM. MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
MXRF	MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
NANC	NORTHERN ANCHOVY	Other nongroundfish	Other nongroundfish	
NRCK	NORTHERN ROCKFISH	Other groundfish	Other groundfish	yes
NSHR	NORTHERN NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
NSLF	NORTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
NSLP	NORTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
NUSF	NOR. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
NUSP	NOR. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
NUSR	NOR. UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
OABL	OTHER ABALONE	Other nongroundfish	Other nongroundfish	
OANC	OTHER ANCHOVY	Other nongroundfish	Other nongroundfish	
OBAS	OTHER BASS	Other nongroundfish	Other nongroundfish	
OCLM	OTHER CLAM	Other nongroundfish	Other nongroundfish	
OCRB	OTHER CRAB	Other nongroundfish	Other nongroundfish	
OCRK	OTHER CROAKER	Other nongroundfish	Other nongroundfish	
OCTP	UNSP. OCTOPUS	Other nongroundfish	Other nongroundfish	
ODSR	OTHER DEMERSAL RKFSH	Other groundfish	Other groundfish	yes
OECH	OTHER ECHINODERM	Other nongroundfish	Other nongroundfish	
OFLT	OTHER FLATFISH	Other flatfish	Other flatfish	yes
OGRN	OTHER GROUNDFISH	Other groundfish	Other groundfish	yes
OLV1	NOM. OLIVE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
OLVE	OLIVE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
OMSK	OTHER MOLLUSKS	Other nongroundfish	Other nongroundfish	
OPLG	OTHER PELAGIC RKFSH	Other groundfish	Other groundfish	yes
ORCK	OTHER ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	yes
ORCK	OTHER ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
ORND	OTHER ROUNDFISH	Other groundfish	Other groundfish	yes
OSCL	OTHER SCALLOP	Other nongroundfish	Other nongroundfish	
OSKT	OTHER SKATES	Unspecified skate	Unspecified skate	yes
OSLR	OTHER SLOPE RKFSH	Other slope rockfish	Other slope rockfish	yes
OSRK	OTHER SHARK	Other nongroundfish	Other nongroundfish	
OSRM	OTHER SHRIMP	Other nongroundfish	Other nongroundfish	
OSTR	OTHER OYSTER	Other nongroundfish	Other nongroundfish	
OTCR	OPILIO TANNER CRAB	Tanner crab	Tanner crab	
OTNA	OTHER TUNA	Other nongroundfish	Other nongroundfish	
OURC	OTHER SEA URCHINS	Other nongroundfish	Other nongroundfish	
OWFS	OCEAN WHITEFISH	Other nongroundfish	Other nongroundfish	
PABL	PINK ABALONE	Other nongroundfish	Other nongroundfish	
PBNT	PACIFIC BONITO	Other nongroundfish	Other nongroundfish	
PBTR	PACIFIC BUTTERFISH	Other nongroundfish	Other nongroundfish	
PCLM	PISMO CLAM	Other nongroundfish	Other nongroundfish	
PCOD	PACIFIC COD	Pacific cod	Other groundfish	yes
PDAB	PACIFIC SANDDAB	Other flatfish	Other flatfish	yes
PDB1	NOM. PACIFIC SANDDAB	Other flatfish	Other flatfish	yes
PFNS	PACIFIC FLATNOSE	Other groundfish	Other groundfish	yes
PGMY	PYGMY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PHAG	PACIFIC HAGFISH	Other nongroundfish	Other nongroundfish	
PHLB	PACIFIC HALIBUT	Other nongroundfish	Other nongroundfish	
PHRG	PACIFIC HERRING	Other nongroundfish	Other nongroundfish	
PINK	PINK SALMON	Other nongroundfish	Other nongroundfish	
PLCK	WALLEYE POLLOCK	Other groundfish	Other groundfish	yes
PNK1	NOM. PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PNKR	PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
POMF	PACIFIC POMFRET	Other nongroundfish	Other nongroundfish	
POP	PACIFIC OCEAN PERCH	Pacific ocean perch	Other slope rockfish	yes
POP1	GEN. SHELF/SLOPE RF	Other slope rockfish	Other slope rockfish	yes
POP2	NOMINAL POP	Pacific ocean perch	Other slope rockfish	yes
PRCL	PURPLE CLAM	Other nongroundfish	Other nongroundfish	
PROW	PROWFISH	Other nongroundfish	Other nongroundfish	
PRR1	NOM. PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PRRK	PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PSDN	PACIFIC SARDINE	Other nongroundfish	Other nongroundfish	
PSHP	PINK SHRIMP	Other nongroundfish	Other nongroundfish	
PSRK	PELAGIC THRESHER SHARK	Other nongroundfish	Other nongroundfish	
PSTR	PACIFIC OYSTER	Other nongroundfish	Other nongroundfish	
PTR1	NOM. PETRALE SOLE	Petrale sole	Petrale sole	yes
PTRL	PETRALE SOLE	Petrale sole	Petrale sole	yes
PUGT	PUGET SOUND ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PWHT	PACIFIC WHITING	Pacific hake	Pacific hake	yes
QCLM	NORTHERN QUAHOG CLAM	Other nongroundfish	Other nongroundfish	
QFSH	QUEENFISH	Other nongroundfish	Other nongroundfish	
QLB1	NOM. QUILLBACK ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
QLBK	QUILLBACK ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
RABL	RED ABALONE	Other nongroundfish	Other nongroundfish	
RATF	SPOTTED RATFISH	Other groundfish	Other groundfish	yes
RCK1	BOCACCIO+CHILIPEPPER RCKFSH	Other shelf rockfish	Other shelf rockfish	yes
RCK2	UNSP. BOLINA RCKFSH	Other nearshore rockfish	Other nearshore rockfish	yes
RCK3	UNSP. DPWTR REDS RCKFSH	Other slope rockfish	Other slope rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
RCK4	UNSP. REDS RCKFSH	Other groundfish	Other groundfish	yes
RCK5	UNSP. SMALL REDS RCKFSH	Other groundfish	Other groundfish	yes
RCK6	UNSP. ROSEFISH RCKFSH	Other groundfish	Other groundfish	yes
RCK7	UNSP. GOPHER RCKFSH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
RCK8	CANARY+VERMILION RCKFSH	Canary rockfish	Canary rockfish	yes
RCK9	BLACK+BLUE ROCKFISH	Black rockfish	Black rockfish	yes
RCKG	ROCK GREENLING	Other nongroundfish	Other nongroundfish	
RCLM	RAZOR CLAM	Other nongroundfish	Other nongroundfish	
RCRB	ROCK CRAB	Other nongroundfish	Other nongroundfish	
RDB1	NOM. REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	yes
RDBD	REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	yes
REDS	REDSTRIPE ROCKFISH	Redstripe rockfish (Remaining rockfish)	Other shelf rockfish	yes
REX	REX SOLE	Other flatfish	Other flatfish	yes
REX1	NOM. REX SOLE	Other flatfish	Other flatfish	yes
REYE	ROUGHEYE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
RFLT	REMAINING FLATFISH	Other flatfish	Other flatfish	yes
RGL1	NOM. ROCK GREENLING	Other nongroundfish	Other nongroundfish	
RGRN	REMAINING GROUNDFISH	Other groundfish	Other groundfish	yes
RHRG	ROUND HERRING	Other nongroundfish	Other nongroundfish	
RKCR	RED KING CRAB	Other nongroundfish	Other nongroundfish	
ROS1	NOM. ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
ROSY	ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
RPRW	RIDGEBACK PRAWN	Other nongroundfish	Other nongroundfish	
RRCK	REMAINING ROCKFISH	Other groundfish	Other groundfish	yes
RRND	REMAINING ROUNDFISH	Other groundfish	Other groundfish	yes
RSCL	RED IRISH LORD	Other nongroundfish	Other nongroundfish	
RSL1	NOM. ROCK SOLE	Other flatfish	Other flatfish	yes
RSOL	ROCK SOLE	Other flatfish	Other flatfish	yes
RSRM	GRASS SHRIMP	Other nongroundfish	Other nongroundfish	
RST1	NOM. ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
RSTN	ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
RURC	RED SEA URCHIN	Other nongroundfish	Other nongroundfish	
RZCL	ROSY RAZOR CLAM	Other nongroundfish	Other nongroundfish	
SABL	SABLEFISH	Sablefish	Sablefish	yes
SAIL	SAILFISH	Other nongroundfish	Other nongroundfish	
SARY	PACIFIC SAURY	Other nongroundfish	Other nongroundfish	
SBL1	NOM. SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	yes
SBLY	SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	yes
SCLM	SOFT-SHELLED CLAM	Other nongroundfish	Other nongroundfish	
SCLP	UNSP. SCULPIN	Other nongroundfish	Other nongroundfish	
SCOR	CALIFORNIA SCORPIONFISH	Other groundfish	Other groundfish	yes
SCR1	NOM. CALIF. SCORPIONFISH	Other groundfish	Other groundfish	yes
SDB1	NOM. SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SFL1	NOM. STARRY FLOUNDER	Starry flounder	Starry flounder	yes
SFLT	UNSP. SHALLOW FLOUNDERS	Other flatfish	Other flatfish	yes
SHAD	UNSPECIFIED SHAD	Other nongroundfish	Other nongroundfish	
SHP1	NOM. CALIFORNIA SHEEPHEAD	Other nongroundfish	Other nongroundfish	
SHPD	CALIFORNIA SHEEPHEAD	Other nongroundfish	Other nongroundfish	
SHRP	SHARPCHIN ROCKFISH	Sharpchin rockfish	Sharpchin rockfish	yes
SKCR	SCARLET KING CRAB	Other nongroundfish	Other nongroundfish	
SLGR	SILVERGREY ROCKFISH	Silvergrey rockfish	Other shelf rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
		(Remaining rockfish)		
SLNS	SLENDER SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
SMLT	UNSP. SMELT	Other nongroundfish	Other nongroundfish	
SNOS	SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	yes
SNS1	NOM. SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	yes
SOCK	SOCKEYE SALMON	Other nongroundfish	Other nongroundfish	
SPK1	NOM. SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SPKL	SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SPRW	SPOTTED PRAWN	Other nongroundfish	Other nongroundfish	
SPSK	SANDPAPER SKATE	Other non-FMP skate	Other non-FMP skate	
SQID	UNSP. SQUID	Other nongroundfish	Other nongroundfish	
SQR1	NOM. SQUARESPOT	Other shelf rockfish	Other shelf rockfish	yes
SQRS	SQUARESPOT ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SRFP	SURFPERCH SPP.	Other nongroundfish	Other nongroundfish	
SRKR	SHORTRAKER ROCKFISH	Other slope rockfish	Other slope rockfish	yes
SSCL	SHARPNOSE SCULPIN	Other nongroundfish	Other nongroundfish	
SSDB	SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
SSKT	STARRY SKATE	Other non-FMP skate	Other non-FMP skate	
SSLF	SOUTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SSLP	SOUTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
SSO1	NOM. SAND SOLE	Other flatfish	Other flatfish	yes
SSOL	SAND SOLE	Other flatfish	Other flatfish	yes
SSP1	NOM. SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	yes
SSPF	SHORTBILL SPEARFISH	Other nongroundfish	Other nongroundfish	
SSPN	SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	yes
SSRD	Deep So. Near-shore RF	Other nearshore rockfish	Other nearshore rockfish	yes
SSRK	SOUPFIN SHARK	Other groundfish	Other groundfish	yes
SSRS	Shallow So. Near-shore RF	Other nearshore rockfish	Other nearshore rockfish	yes
STAR	STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
STL1	NOM. STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
STLH	STEELHEAD	Other nongroundfish	Other nongroundfish	
STNA	SKIPJACK TUNA	Other nongroundfish	Other nongroundfish	
STR1	NOM. STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
STRK	STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
STRY	STARRY FLOUNDER	Starry flounder	Starry flounder	yes
SUSF	SOU. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SUSP	SOU. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
SWRD	SWORDFISH	Other nongroundfish	Other nongroundfish	
SWS1	NOM. SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SWSP	SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
TCOD	PACIFIC TOMCOD	Other nongroundfish	Other nongroundfish	
TGR1	NOM. TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
THD1	NOM. THORNYHEADS	Mixed thornyheads	Mixed thornyheads	yes
THDS	THORNYHEADS (MIXED)	Mixed thornyheads	Mixed thornyheads	yes
TIGR	TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
TRE1	NOM. TREEFISH	Other nearshore rockfish	Other nearshore rockfish	yes
TREE	TREEFISH	Other nearshore rockfish	Other nearshore rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP
TSRK	COMMON THRESHER SHARK	Other nongroundfish	Other nongroundfish	
UABL	UNSPECIFIED ABALONE	Other nongroundfish	Other nongroundfish	
UCLM	UNSPECIFIED CLAM	Other nongroundfish	Other nongroundfish	
UCRB	UNSPECIFIED CRAB	Other nongroundfish	Other nongroundfish	
UDAB	UNSP. SANDDABS	Other flatfish	Other flatfish	yes
UDF1	UNSP. DEEP-91 FLOUNDERS	Other flatfish	Other flatfish	yes
UDF2	UNSP. DEEP-95 FLOUNDERS	Other flatfish	Other flatfish	yes
UDM1	UNSP. DEMERSAL-91	Other groundfish	Other groundfish	yes
UDNR	UNSP. DEEP NEAR-SHORE RF	Other nearshore rockfish	Other nearshore rockfish	yes
UDSR	UNSP. DEMERSAL RKFSH	Other groundfish	Other groundfish	yes
UDW1	SHORTRAKER+ROUGHEYE	Other slope rockfish	Other slope rockfish	yes
UECH	UNSPECIFIED ECHINODERM	Other nongroundfish	Other nongroundfish	
UFL1	FLOUNDERS (NO FSOL)	Other flatfish	Other flatfish	yes
UFLT	UNSP. FLATFISH	Other flatfish	Other flatfish	yes
UGLG	UNSP. GREENLING	Other nongroundfish	Other nongroundfish	
UGRN	UNSP. GROUNDFISH	Other groundfish	Other groundfish	yes
UHAG	UNSPECIFIED HAGFISH	Other nongroundfish	Other nongroundfish	
UHLB	UNSPECIFIED HALIBUT	Other nongroundfish	Other nongroundfish	
UJEL	UNSP. JELLYFISH	Other nongroundfish	Other nongroundfish	
UKCR	UNSP. KING CRAB	Other nongroundfish	Other nongroundfish	
UMCK	UNSP. MACKEREL	Other nongroundfish	Other nongroundfish	
UMSK	UNSPECIFIED MOLLUSKS	Other nongroundfish	Other nongroundfish	
UPLG	UNSP. PELAGIC RKFSH	Other groundfish	Other groundfish	yes
UPOP	UNSP. POP GROUP	Pacific ocean perch	Other slope rockfish	yes
URCK	UNSP. ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	yes
URCK	UNSP. ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	yes
URK1	SRKR+REYE+NRCK+SHRP	Other slope rockfish	Other slope rockfish	yes
URND	UNSP. ROUNDFISH	Other groundfish	Other groundfish	yes
USCL	UNSPECIFIED SCALLOP	Other nongroundfish	Other nongroundfish	
USCU	UNSP. SEA CUCUMBERS	Other nongroundfish	Other nongroundfish	
USF1	UNSP. SHALLOW-91 FLOUNDERS	Other flatfish	Other flatfish	yes
USHR	UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
USKT	UNSP. SKATE	Unspecified skate	Unspecified skate	yes
USLF	UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
USLP	UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
USLR	UNSP. SLOPE RKFSH	Other slope rockfish	Other slope rockfish	yes
USMN	UNSP. SALMON	Other nongroundfish	Other nongroundfish	
USR1	UNSP. SLOPE-91	Other groundfish	Other groundfish	yes
USR2	UNSP. SLOPE-93	Other groundfish	Other groundfish	yes
USRK	UNSP. SHARK	Other nongroundfish	Other nongroundfish	
USRM	UNSP. OCEAN SHRIMP	Other nongroundfish	Other nongroundfish	
USTG	UNSP. STURGEON	Other nongroundfish	Other nongroundfish	
USTR	UNSPECIFIED OYSTER	Other nongroundfish	Other nongroundfish	
UTCR	UNSP. TANNER CRAB	Tanner crab	Tanner crab	
UTNA	UNSPECIFIED TUNA	Other nongroundfish	Other nongroundfish	
UTRB	UNSP. TURBOTS	Other flatfish	Other flatfish	yes
UURC	UNSP. SEA URCHINS	Other nongroundfish	Other nongroundfish	
VCLM	VARNISH CLAM	Other nongroundfish	Other nongroundfish	
VRM1	NOM. VERMILLION ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
VRML	VERMILION ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
WABL	WHITE ABALONE	Other nongroundfish	Other nongroundfish	
WBAS	WHITE SEABASS	Other nongroundfish	Other nongroundfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	FMP
WCLM	WASHINGTON CLAM	Other nongroundfish	Other nongroundfish	
WCRK	WHITE CROAKER	Other nongroundfish	Other nongroundfish	
WDOW	WIDOW ROCKFISH	Widow rockfish	Widow rockfish	yes
WDW1	NOM. WIDOW ROCKFISH	Widow rockfish	Widow rockfish	yes
WEEL	WOLF EEL	Other nongroundfish	Other nongroundfish	
WHOO	WAHOO	Other nongroundfish	Other nongroundfish	
WSTG	WHITE STURGEON	Other nongroundfish	Other nongroundfish	
YEY1	NOM. YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	yes
YEYE	YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	yes
YLTL	YELLOWTAIL	Other nongroundfish	Other nongroundfish	
YMTH	YELLOWMOUTH ROCKFISH	Yellowmouth rockfish (Remaining rockfish)	Other slope rockfish	yes
YSOL	YELLOWFIN SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
YTNA	YELLOWFIN TUNA	Other nongroundfish	Other nongroundfish	
YTR1	NOM. YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	yes
YTRK	YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	yes

Appendix C

Species identification codes used in the Pacific Coast Fisheries Information Network (PacFIN) database and assigned to WCGOP observer data, with aggregated species groups used in this report for the nearshore fixed gear sector of the groundfish fishery.

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
ALBC	ALBACORE	Other nongroundfish	Other nongroundfish	
AKSK	ALASKA SKATE	Other non-FMP skate	Other non-FMP skate	
AMCK	ATKA MACKEREL	Other nongroundfish	Other nongroundfish	
APLC	ALASKA PLAICE	Other non-FMP flatfish	Other non-FMP flatfish	
ARR1	NOM. AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	
ARRA	AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	
ART1	NOM. ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	
ARTH	ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	
ASKT	ALEUTIAN SKATE	Other nongroundfish	Other nongroundfish	
ASRK	PACIFIC ANGEL SHARK	Other nongroundfish	Other nongroundfish	
BABL	BLACK ABALONE	Other nongroundfish	Other nongroundfish	
BANK	BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	
BCAC	BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	
BCC1	NOM. BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	
BCLM	BUTTER CLAM	Other nongroundfish	Other nongroundfish	
BGL1	NOM. BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	
BHAG	BLACK HAGFISH	Other nongroundfish	Other nongroundfish	
BISC	BROWN IRISH LORD	Brown Irish lord	Brown Irish lord	yes
BKCR	BLUE KING CRAB	Other nongroundfish	Other nongroundfish	
BLCK	BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLGL	BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	
BLK1	NOM. BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLPT	BLACK EELPOUT	Other nongroundfish	Other nongroundfish	
BLSK	BLACK SKATE	Other non-FMP skate	Other non-FMP skate	
BLU1	NOM. BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BLUR	BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BMCK	BULLET MACKEREL	Other nongroundfish	Other nongroundfish	
BMRL	BLUE MARLIN	Other nongroundfish	Other nongroundfish	
BMSL	BLUE OR BAY MUSSEL	Other nongroundfish	Other nongroundfish	
BNK1	NOM. BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	
BRNZ	BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
BRW1	NOM. BROWN ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
BRWN	BROWN ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
BRZ1	NOM. BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
BSCL	BUFFALO SCULPIN	Buffalo sculpin	Buffalo sculpin	yes
BSJK	BLACK SKIPJACK	Other nongroundfish	Other nongroundfish	
BSKT	BIG SKATE	Big skate	Big skate	
BSOL	BUTTER SOLE	Other flatfish	Other flatfish	
BSRK	BLUE SHARK	Other nongroundfish	Other nongroundfish	
BSRM	UNSP. BAIT SHRIMP	Other nongroundfish	Other nongroundfish	
BTCR	BAIRDI TANNER CRAB	Tanner crab	Tanner crab	
BTNA	BLUEFIN TUNA	Other nongroundfish	Other nongroundfish	
BTRY	BAT RAY	Other nongroundfish	Other nongroundfish	
BYEL	BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
BYL1	NOM. BLACK-AND-YELLOW	Other nearshore rockfish	Shallow nearshore rockfish	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
	ROCKFISH			
CBZ1	NOM. CABEZON	Cabezon	Cabezon	yes
CBZN	CABEZON	Cabezon	Cabezon	yes
CEEL	SPOTTED CUSK-EEL	Other nongroundfish	Other nongroundfish	
CHL1	NOM. CALIFORNIA HALIBUT	California halibut	California halibut	
CHLB	CALIFORNIA HALIBUT	California halibut	California halibut	
CHN1	NOM. CHINA ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
CHNA	CHINA ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
CHNK	CHINOOK SALMON	Other nongroundfish	Other nongroundfish	
CHUM	CHUM SALMON	Other nongroundfish	Other nongroundfish	
CKLE	BASKET COCKLE	Other nongroundfish	Other nongroundfish	
CLC1	NOM. CALICO ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CLCO	CALICO ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CLP1	NOM. CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	
CLPR	CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	
CMCK	CHUB MACKEREL	Other nongroundfish	Other nongroundfish	
CMEL	CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	
CML1	NOM. CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	
CMSL	CALIFORNIA MUSSEL	Other nongroundfish	Other nongroundfish	
CNR1	NOM. CANARY ROCKFISH	Canary rockfish	Canary rockfish	
CNRY	CANARY ROCKFISH	Canary rockfish	Canary rockfish	
COHO	COHO SALMON	Other nongroundfish	Other nongroundfish	
COP1	NOM. COPPER ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
COPP	COPPER ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CPLN	CAPELIN	Other nongroundfish	Other nongroundfish	
CSKT	CALIFORNIA SKATE	California skate	California skate	
CSL1	NOM. CURLFIN SOLE	Other flatfish	Other flatfish	
CSLK	CALIFORNIA SLICKHEAD	Other nongroundfish	Other nongroundfish	
CSOL	CURLFIN SOLE	Other flatfish	Other flatfish	
CSRK	BROWN CAT SHARK	Other nongroundfish	Other nongroundfish	
CTRB	C-O SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
CUDA	PACIFIC BARRACUDA	Other nongroundfish	Other nongroundfish	
CWC1	NOM. COWCOD ROCKFISH	Other shelf rockfish	Cowcod	
CWCD	COWCOD ROCKFISH	Other shelf rockfish	Cowcod	
DARK	DARK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
DBR1	NOM. DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	
DBRK	DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	
DCRB	DUNGENESS CRAB	Dungeness crab	Dungeness crab	
DFLT	UNSP. DEEP FLOUNDERS	Other flatfish	Other flatfish	
DOVR	DOVER SOLE	Dover sole	Dover sole	
DRDO	DORADO	Other nongroundfish	Other nongroundfish	
DSOL	DEEPSEA SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
DSRK	SPINY DOGFISH	Spiny dogfish	Spiny dogfish	
DTRB	DIAMOND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
DUSK	DUSKY ROCKFISH	Other groundfish	Other groundfish	
DVR1	NOM. DOVER SOLE	Dover sole	Dover sole	
DWRF	DWARF-RED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
EELS	UNSPECIFIED EELS	Other nongroundfish	Other nongroundfish	
EGL1	NOM. ENGLISH SOLE	English sole	English sole	
EGLS	ENGLISH SOLE	English sole	English sole	
ESTR	EASTERN OYSTER	Other nongroundfish	Other nongroundfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
ETNA	BIGEYE TUNA	Other nongroundfish	Other nongroundfish	
EULC	EULACHON	Eulachon	Eulachon	
EURO	EUROPEAN OYSTER	Other nongroundfish	Other nongroundfish	
FLAG	FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FLG1	NOM. FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FNTS	FANTAIL SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
FRCK	FRECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FSOL	FLATHEAD SOLE	Other flatfish	Other flatfish	
GABL	GREEN ABALONE	Other nongroundfish	Other nongroundfish	
GBAS	GIANT SEA BASS	Other nongroundfish	Other nongroundfish	
GBL1	NOM. GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
GBLC	GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
GCLM	GAPER CLAM	Other nongroundfish	Other nongroundfish	
GDUK	GEODUCK	Other nongroundfish	Other nongroundfish	
GGRD	GIANT GRENADIER	Other nongroundfish	Other nongroundfish	
GKCR	GOLDEN KING CRAB	Other nongroundfish	Other nongroundfish	
GPH1	NOM. GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPHR	GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPRW	GOLDEN PRAWN	Other nongroundfish	Other nongroundfish	
GRAS	GRASS ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
GRDR	UNSP. GRENADIERS	Grenadiers	Grenadiers	
GREN	PACIFIC GRENADIER	Grenadiers	Grenadiers	
GRS1	NOM. GRASS ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
GSP1	NOM. GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	
GSPT	GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	
GSQD	GIANT SQUID	Other nongroundfish	Other nongroundfish	
GSR1	NOM. GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	
GSRK	GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	
GSRM	GHOST SHRIMP	Other nongroundfish	Other nongroundfish	
GSTG	GREEN STURGEON	Other nongroundfish	Other nongroundfish	
GTRB	GREENLAND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
HBRK	HALFBANDED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HCLM	HORSE CLAMS	Other nongroundfish	Other nongroundfish	
HLQN	HARLEQUIN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HNY1	NOM. HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HNYC	HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HTRB	HORNYHEAD TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
ISRK	BIGEYE THRESHER SHARK	Other nongroundfish	Other nongroundfish	
JCLM	CALIFORNIA JACKKNIFE CLAM	Other nongroundfish	Other nongroundfish	
JMCK	JACK MACKEREL	Other nongroundfish	Other nongroundfish	
KFSH	GIANT KELPFISH	Other nongroundfish	Other nongroundfish	
KGL1	NOM. KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLP1	NOM. KELP ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
KLPG	KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLPR	KELP ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
KMKA	KAMCHATKA FLOUNDER	Other non-FMP flatfish	Other non-FMP flatfish	
KSTR	KUMAMOTO OYSTER	Other nongroundfish	Other nongroundfish	
LCD1	NOM. LINGCOD	Lingcod	Lingcod	yes
LCLM	NATIVE LITTLENECK	Other nongroundfish	Other nongroundfish	
LCOD	LINGCOD	Lingcod	Lingcod	yes
LDAB	LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
LDB1	NOM. LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LOBS	CALIF. SPINY LOBSTER	Other nongroundfish	Other nongroundfish	
LSKT	LONGNOSE SKATE	Longnose skate	Longnose skate	
LSP1	NOM. LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	
LSPN	LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	
LSRK	LEOPARD SHARK	Other groundfish	Other groundfish	
LSTR	OLYMPIA OYSTER	Other nongroundfish	Other nongroundfish	
LUVR	LOUVAR	Other nongroundfish	Other nongroundfish	
MACL	MUD CLAMS	Other nongroundfish	Other nongroundfish	
MAKO	SHORTFIN MAKO SHARK	Other nongroundfish	Other nongroundfish	
MCLM	MANILA CLAM	Other nongroundfish	Other nongroundfish	
MEEL	MONKEYFACE EEL	Other nongroundfish	Other nongroundfish	
MISC	MISC. FISH/ANIMALS	Other nongroundfish	Other nongroundfish	
MOLA	COMMON MOLA	Other nongroundfish	Other nongroundfish	
MRLN	STRIPED MARLIN	Other nongroundfish	Other nongroundfish	
MSC2	MISCELLANEOUS FISH	Other nongroundfish	Other nongroundfish	
MSHP	PLAINFIN MIDSHIPMAN	Other nongroundfish	Other nongroundfish	
MSQD	MARKET SQUID	Other nongroundfish	Other nongroundfish	
MSRM	MUD SHRIMP	Other nongroundfish	Other nongroundfish	
MXR1	NOM. MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
MXRF	MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NANC	NORTHERN ANCHOVY	Other nongroundfish	Other nongroundfish	
NRCK	NORTHERN ROCKFISH	Other groundfish	Other groundfish	
NSHR	NORTHERN NEAR-SHORE ROCKFISH	Other nearshore rockfish	Northern nearshore rockfish	yes
NSLF	NORTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NSLP	NORTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
NUSF	NOR. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NUSP	NOR. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
NUSR	NOR. UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Northern nearshore rockfish	yes
OABL	OTHER ABALONE	Other nongroundfish	Other nongroundfish	
OANC	OTHER ANCHOVY	Other nongroundfish	Other nongroundfish	
OBAS	OTHER BASS	Other nongroundfish	Other nongroundfish	
OCLM	OTHER CLAM	Other nongroundfish	Other nongroundfish	
OCRB	OTHER CRAB	Other nongroundfish	Other nongroundfish	
OCRK	OTHER CROAKER	Other nongroundfish	Other nongroundfish	
OCTP	UNSP. OCTOPUS	Other nongroundfish	Other nongroundfish	
ODSR	OTHER DEMERSAL RKFSH	Other groundfish	Other groundfish	
OECH	OTHER ECHINODERM	Other nongroundfish	Other nongroundfish	
OFLT	OTHER FLATFISH	Other flatfish	Other flatfish	
OGRN	OTHER GROUNDFISH	Other groundfish	Other groundfish	
OLV1	NOM. OLIVE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
OLVE	OLIVE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
OMSK	OTHER MOLLUSKS	Other nongroundfish	Other nongroundfish	
OPLG	OTHER PELAGIC RKFSH	Other groundfish	Other groundfish	
ORCK	OTHER ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	
ORCK	OTHER ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	
ORND	OTHER ROUNDFISH	Other groundfish	Other groundfish	
OSCL	OTHER SCALLOP	Other nongroundfish	Other nongroundfish	
OSKT	OTHER SKATES	Unspecified skate	Unspecified skate	
OSLR	OTHER SLOPE RKFSH	Other slope rockfish	Other slope rockfish	
OSRK	OTHER SHARK	Other nongroundfish	Other nongroundfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	NS Species
OSRM	OTHER SHRIMP	Other nongroundfish	Other nongroundfish	
OSTR	OTHER OYSTER	Other nongroundfish	Other nongroundfish	
OTCR	OPILIO TANNER CRAB	Tanner crab	Tanner crab	
OTNA	OTHER TUNA	Other nongroundfish	Other nongroundfish	
OURC	OTHER SEA URCHINS	Other nongroundfish	Other nongroundfish	
OWFS	OCEAN WHITEFISH	Other nongroundfish	Other nongroundfish	
PABL	PINK ABALONE	Other nongroundfish	Other nongroundfish	
PBNT	PACIFIC BONITO	Other nongroundfish	Other nongroundfish	
PBTR	PACIFIC BUTTERFISH	Other nongroundfish	Other nongroundfish	
PCLM	PISMO CLAM	Other nongroundfish	Other nongroundfish	
PCOD	PACIFIC COD	Pacific cod	Other groundfish	
PDAB	PACIFIC SANDDAB	Other flatfish	Other flatfish	
PDB1	NOM. PACIFIC SANDDAB	Other flatfish	Other flatfish	
PFNS	PACIFIC FLATNOSE	Other groundfish	Other groundfish	
PGMY	PYGMY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PHAG	PACIFIC HAGFISH	Other nongroundfish	Other nongroundfish	
PHLB	PACIFIC HALIBUT	Other nongroundfish	Other nongroundfish	
PHRG	PACIFIC HERRING	Other nongroundfish	Other nongroundfish	
PINK	PINK SALMON	Other nongroundfish	Other nongroundfish	
PLCK	WALLEYE POLLOCK	Other groundfish	Other groundfish	
PNK1	NOM. PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PNKR	PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
POMF	PACIFIC POMFRET	Other nongroundfish	Other nongroundfish	
POP	PACIFIC OCEAN PERCH	Pacific ocean perch	Other slope rockfish	
POP1	GEN. SHELF/SLOPE RF	Other slope rockfish	Other slope rockfish	
POP2	NOMINAL POP	Pacific ocean perch	Other slope rockfish	
PRCL	PURPLE CLAM	Other nongroundfish	Other nongroundfish	
PROW	PROWFISH	Other nongroundfish	Other nongroundfish	
PRR1	NOM. PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PRRK	PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PSDN	PACIFIC SARDINE	Other nongroundfish	Other nongroundfish	
PSHP	PINK SHRIMP	Other nongroundfish	Other nongroundfish	
PSRK	PELAGIC THRESHER SHARK	Other nongroundfish	Other nongroundfish	
PSTR	PACIFIC OYSTER	Other nongroundfish	Other nongroundfish	
PTR1	NOM. PETRALE SOLE	Petrale sole	Petrale sole	
PTRL	PETRALE SOLE	Petrale sole	Petrale sole	
PUGT	PUGET SOUND ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PWHT	PACIFIC WHITING	Pacific hake	Pacific hake	
QCLM	NORTHERN QUAHOG CLAM	Other nongroundfish	Other nongroundfish	
QFSH	QUEENFISH	Other nongroundfish	Other nongroundfish	
QLB1	NOM. QUILLBACK ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
QLBK	QUILLBACK ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
RABL	RED ABALONE	Other nongroundfish	Other nongroundfish	
RATF	SPOTTED RATFISH	Other groundfish	Other groundfish	
RCK1	BOCACCIO+CHILIPEPPER RCKFSH	Other shelf rockfish	Other shelf rockfish	
RCK2	UNSP. BOLINA RCKFSH	Other nearshore rockfish	Deeper nearshore rockfish	yes
RCK3	UNSP. DPWTR REDS RCKFSH	Other slope rockfish	Other slope rockfish	
RCK4	UNSP. REDS RCKFSH	Other groundfish	Other groundfish	
RCK5	UNSP. SMALL REDS RCKFSH	Other groundfish	Other groundfish	
RCK6	UNSP. ROSEFISH RCKFSH	Other groundfish	Other groundfish	
RCK7	UNSP. GOPHER RCKFSH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
RCK8	CANARY+VERMILION RCKFSH	Canary rockfish	Canary rockfish	
RCK9	BLACK+BLUE ROCKFISH	Black rockfish	Black rockfish	yes
RCKG	ROCK GREENLING	Other greenling	Other greenling	
RCLM	RAZOR CLAM	Other nongroundfish	Other nongroundfish	
RCRB	ROCK CRAB	Other nongroundfish	Other nongroundfish	
RDB1	NOM. REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	
RDBD	REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	
REDS	REDSTRIPE ROCKFISH	Redstripe rockfish (Remaining rockfish)	Other slope rockfish	
REX	REX SOLE	Other flatfish	Other flatfish	
REX1	NOM. REX SOLE	Other flatfish	Other flatfish	
REYE	ROUGHEYE ROCKFISH	Other slope rockfish	Other slope rockfish	
RFLT	REMAINING FLATFISH	Other flatfish	Other flatfish	
RGL1	NOM. ROCK GREENLING	Other greenling	Other greenling	
RGRN	REMAINING GROUNDFISH	Other groundfish	Other groundfish	
RHRG	ROUND HERRING	Other nongroundfish	Other nongroundfish	
RKCR	RED KING CRAB	Other nongroundfish	Other nongroundfish	
ROS1	NOM. ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
ROSY	ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RPRW	RIDGEBACK PRAWN	Other nongroundfish	Other nongroundfish	
RRCK	REMAINING ROCKFISH	Other groundfish	Other groundfish	
RRND	REMAINING ROUNDFISH	Other groundfish	Other groundfish	
RSCL	RED IRISH LORD	Red Irish lord	Red Irish lord	yes
RSL1	NOM. ROCK SOLE	Other flatfish	Other flatfish	
RSOL	ROCK SOLE	Other flatfish	Other flatfish	
RSRM	GRASS SHRIMP	Other nongroundfish	Other nongroundfish	
RST1	NOM. ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RSTN	ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RURC	RED SEA URCHIN	Other nongroundfish	Other nongroundfish	
RZCL	ROSY RAZOR CLAM	Other nongroundfish	Other nongroundfish	
SABL	SABLEFISH	Sablefish	Sablefish	
SAIL	SAILFISH	Other nongroundfish	Other nongroundfish	
SARY	PACIFIC SAURY	Other nongroundfish	Other nongroundfish	
SBL1	NOM. SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	
SBLY	SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	
SCLM	SOFT-SHELLED CLAM	Other nongroundfish	Other nongroundfish	
SCLP	UNSP. SCULPIN	Other nongroundfish	Other nongroundfish	
SCOR	CALIFORNIA SCORPIONFISH	Other groundfish	Other groundfish	yes
SCR1	NOM. CALIF. SCORPIONFISH	Other groundfish	Other groundfish	yes
SDB1	NOM. SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SFL1	NOM. STARRY FLOUNDER	Starry flounder	Starry flounder	
SFLT	UNSP. SHALLOW FLOUNDERS	Other flatfish	Other flatfish	
SHAD	UNSPECIFIED SHAD	Other nongroundfish	Other nongroundfish	
SHP1	NOM. CALIFORNIA SHEEPHEAD	California sheephead	California sheephead	yes
SHPD	CALIFORNIA SHEEPHEAD	California sheephead	California sheephead	yes
SHRP	SHARPCHIN ROCKFISH	Sharpchin rockfish	Sharpchin rockfish	
SKCR	SCARLET KING CRAB	Other nongroundfish	Other nongroundfish	
SLGR	SILVERGREY ROCKFISH	Silvergray rockfish (Remaining rockfish)	Other shelf rockfish	
SLNS	SLENDER SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
SMLT	UNSP. SMELT	Other nongroundfish	Other nongroundfish	
SNOS	SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
SNS1	NOM. SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	
SOCK	SOCKEYE SALMON	Other nongroundfish	Other nongroundfish	
SPK1	NOM. SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SPKL	SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SPRW	SPOTTED PRAWN	Other nongroundfish	Other nongroundfish	
SPSK	SANDPAPER SKATE	Other non-FMP skate	Other non-FMP skate	
SQID	UNSP. SQUID	Other nongroundfish	Other nongroundfish	
SQR1	NOM. SQUARESPOT	Other shelf rockfish	Other shelf rockfish	
SQRS	SQUARESPOT ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SRFP	SURFPERCH SPP.	Other nongroundfish	Other nongroundfish	
SRKR	SHORTRAKER ROCKFISH	Other slope rockfish	Other slope rockfish	
SSCL	SHARPNOSE SCULPIN	Other nongroundfish	Other nongroundfish	
SSDB	SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
SSKT	STARRY SKATE	Other non-FMP skate	Other non-FMP skate	
SSLF	SOUTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SSLP	SOUTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
SSO1	NOM. SAND SOLE	Other flatfish	Other flatfish	
SSOL	SAND SOLE	Other flatfish	Other flatfish	
SSPF	SHORTBILL SPEARFISH	Other nongroundfish	Other nongroundfish	
SSP1	NOM. SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	
SSPN	SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	
SSRD	Deep So. Near-shore RF	Southern nearshore rockfish	Deeper nearshore rockfish	yes
SSRK	SOUPFIN SHARK	Other groundfish	Other groundfish	
SSRS	Shallow So. Near-shore RF	Southern nearshore rockfish	Shallow nearshore rockfish	yes
STAR	STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STL1	NOM. STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STLH	STEELHEAD	Other nongroundfish	Other nongroundfish	
STNA	SKIPJACK TUNA	Other nongroundfish	Other nongroundfish	
STR1	NOM. STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STRK	STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STRY	STARRY FLOUNDER	Starry flounder	Starry flounder	
SUSF	SOU. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SUSP	SOU. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
SWRD	SWORDFISH	Other nongroundfish	Other nongroundfish	
SWS1	NOM. SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SWSP	SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
TCOD	PACIFIC TOMCOD	Other nongroundfish	Other nongroundfish	
TGR1	NOM. TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	
THD1	NOM. THORNYHEADS	Mixed thornyheads	Mixed thornyheads	
THDS	THORNYHEADS (MIXED)	Mixed thornyheads	Mixed thornyheads	
TIGR	TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	
TRE1	NOM. TREEFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
TREE	TREEFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
TSRK	COMMON THRESHER SHARK	Other nongroundfish	Other nongroundfish	
UABL	UNSPECIFIED ABALONE	Other nongroundfish	Other nongroundfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
UCLM	UNSPECIFIED CLAM	Other nongroundfish	Other nongroundfish	
UCRB	UNSPECIFIED CRAB	Other nongroundfish	Other nongroundfish	
UDAB	UNSP. SANDDABS	Other flatfish	Other flatfish	
UDF1	UNSP. DEEP-91 FLOUNDERS	Other flatfish	Other flatfish	
UDF2	UNSP. DEEP-95 FLOUNDERS	Other flatfish	Other flatfish	
UDM1	UNSP. DEMERSAL-91	Other groundfish	Other groundfish	
UDNR	UNSP. DEEP NEAR-SHORE RF	Other nearshore rockfish	Deeper nearshore rockfish	yes
UDSR	UNSP. DEMERSAL RKFSH	Other groundfish	Other groundfish	
UDW1	SHORTRAKER+ROUGHEYE	Other slope rockfish	Other slope rockfish	
UECH	UNSPECIFIED ECHINODERM	Other nongroundfish	Other nongroundfish	
UFL1	FLOUNDERS (NO FSOL)	Other flatfish	Other flatfish	
UFLT	UNSP. FLATFISH	Other flatfish	Other flatfish	
UGLG	UNSP. GREENLING	Other greenling	Other greenling	yes
UGRN	UNSP. GROUNDFISH	Other groundfish	Other groundfish	
UHAG	UNSPECIFIED HAGFISH	Other nongroundfish	Other nongroundfish	
UHLB	UNSPECIFIED HALIBUT	Other nongroundfish	Other nongroundfish	
UJEL	UNSP. JELLYFISH	Other nongroundfish	Other nongroundfish	
UKCR	UNSP. KING CRAB	Other nongroundfish	Other nongroundfish	
UMCK	UNSP. MACKEREL	Other nongroundfish	Other nongroundfish	
UMSK	UNSPECIFIED MOLLUSKS	Other nongroundfish	Other nongroundfish	
UPLG	UNSP. PELAGIC RKFSH	Other groundfish	Other groundfish	
UPOP	UNSP. POP GROUP	Pacific ocean perch	Other slope rockfish	
URCK	UNSP. ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	
URCK	UNSP. ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	
URK1	SRKR+REYE+NRCK+SHRP	Other slope rockfish	Other slope rockfish	
URND	UNSP. ROUNDFISH	Other groundfish	Other groundfish	
USCL	UNSPECIFIED SCALLOP	Other nongroundfish	Other nongroundfish	
USCU	UNSP. SEA CUCUMBERS	Other nongroundfish	Other nongroundfish	
USF1	UNSP. SHALLOW-91 FLOUNDERS	Other flatfish	Other flatfish	
USHR	UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes
USHR	UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
USKT	UNSP. SKATE	Unspecified skate	Unspecified skate	
USLF	UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
USLP	UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
USLR	UNSP. SLOPE RKFSH	Other slope rockfish	Other slope rockfish	
USMN	UNSP. SALMON	Other nongroundfish	Other nongroundfish	
USR1	UNSP. SLOPE-91	Other groundfish	Other groundfish	
USR2	UNSP. SLOPE-93	Other groundfish	Other groundfish	
USRK	UNSP. SHARK	Other nongroundfish	Other nongroundfish	
USRM	UNSP. OCEAN SHRIMP	Other nongroundfish	Other nongroundfish	
USTG	UNSP. STURGEON	Other nongroundfish	Other nongroundfish	
USTR	UNSPECIFIED OYSTER	Other nongroundfish	Other nongroundfish	
UTCR	UNSP. TANNER CRAB	Tanner crab	Tanner crab	
UTNA	UNSPECIFIED TUNA	Other nongroundfish	Other nongroundfish	
UTRB	UNSP. TURBOTS	Other flatfish	Other flatfish	
UURC	UNSP. SEA URCHINS	Other nongroundfish	Other nongroundfish	
VCLM	VARNISH CLAM	Other nongroundfish	Other nongroundfish	
VRM1	NOM. VERMILLION ROCKFISH	Other shelf rockfish	Other shelf rockfish	
VRML	VERMILION ROCKFISH	Other shelf rockfish	Other shelf rockfish	
WABL	WHITE ABALONE	Other nongroundfish	Other nongroundfish	
WBAS	WHITE SEABASS	Other nongroundfish	Other nongroundfish	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40˚ 10' N latitude	Species Group - South of 40˚ 10' N latitude	NS Species
WCLM	WASHINGTON CLAM	Other nongroundfish	Other nongroundfish	
WCRK	WHITE CROAKER	Other nongroundfish	Other nongroundfish	
WDOW	WIDOW ROCKFISH	Widow rockfish	Widow rockfish	
WDW1	NOM. WIDOW ROCKFISH	Widow rockfish	Widow rockfish	
WEEL	WOLF EEL	Other nongroundfish	Other nongroundfish	
WHOO	WAHOO	Other nongroundfish	Other nongroundfish	
WSTG	WHITE STURGEON	Other nongroundfish	Other nongroundfish	
YEY1	NOM. YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	
YEYE	YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	
YLTL	YELLOWTAIL	Other nongroundfish	Other nongroundfish	
YMTH	YELLOWMOUTH ROCKFISH	Yellowmouth rockfish (Remaining rockfish)	Other slope rockfish	
YSOL	YELLOWFIN SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
YTNA	YELLOWFIN TUNA	Other nongroundfish	Other nongroundfish	
YTR1	NOM. YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	
YTRK	YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	

2011 Hake Assessment

- STAR meets Feb. 7-11, in Seattle (Deca hotel)
- We are making progress in addressing comments of prior STAR Panels, e.g.:
  - We have developed sex-specific acoustic estimates, to address differential male/female growth rates
  - We have created programming to summarize all fishery data by time blocks, to better account for the effects of within-year growth in the analysis of length data
- We will meet with Canadian colleagues later this month to seek agreement on 1) the inclusion and treatment of data, 2) the assembly of a single, comprehensive assessment document, 3) any suggested changes to TORs

2010 Survey Season Completed

- Groundfish Bottom Trawl Survey completed its final leg October 19th on time. Approximately 714 cells/sites were successfully sampled coast-wide. No unusual (volume/species) catches to report in final Pass (August 21- October 19).

- Southern California Bight Hook and Line Survey was successfully conducted from September 24 – October 7th.

Trawl Catch Shares Observer Training Sessions

- Trainings – 13 day course for trawl catch share observer candidates who did not work for WCGOP in 2010.
  - November 29 – December 15, 2010
  - January 10 – 26, 2011
- Briefing – 5-day course for observers who worked for WCGOP in 2010.
  - December 6 – 10, 2010

Total Mortality Report
(will be posted soon)

- Darkblotched rockfish exceeded the 2009 OY specification by 6% (301 mt versus OY of 285 mt). The darkblotched rockfish 2009 ABC (437 mt) was not exceeded.
- Longnose skate exceeded the 2009 OY specification by 8% (1455 mt versus OY of 1349 mt). The longnose skate 2009 ABC (3428 mt) was not exceeded.
  - As the sorting requirement for landed longnose was implemented in March 2009, this is likely an underestimate.
- Total estimated mortality of canary rockfish in 2009 was the lowest value (38 mt) and lowest proportion of OY (36%) since estimates for this species began in 2005.
- Twenty-six groundfish species or species groups (65%) had total fishing mortality estimates which were less than 50% of 2009 OY . However, the total mortality estimate for many of these increased from 2008 to 2009.
- In summary: No stocks which were in a rebuilding mode were subject to overfishing in 2009.

Halibut Bycatch Report
(will be posted soon)

- After the September Council meeting, the observer program updated the Pacific halibut total mortality report based on comments from the SSC and the Council.

- As requested, the updated report includes the estimated percentage of sub-legal to legal halibut in the LE Trawl fishery.

SWFSC/UCSB Research Cruise

- Data collected using a manned submersible, deployed from F/V Velero IV
- Quantify habitat-specific biomass and size-composition of Christmas tree black corals
  - Evaluate changes since 2002 baseline collection
- Also collected depth, temperature. salinity, O2, and habitat type
- Cowcod observed separate from the corals
  - believed to be from 1999 year-class
- Follow-up survey of cowcod on one bank scheduled for next fall

SWFSC – Pre-recruit Survey Data

- Only the southern portion of the survey (San Diego to Cape Mendocino) conducted in 2010
  - May-June on F/V Frosti
- The Groundfish Analysis Team finished processing all of the data collected on this year's survey
- Indices will be provided to assessment authors

2011 Hake Acoustic Survey Update

- Signed fleet allocation plan now calls for 70 DAS allocated to the hake survey
- Bell M. Shimada
- June 19 – September 4
- Miller Freeman: Major repairs from November to early May, then assigned to Alaska surveys

CONSIDERATION OF INSEASON ADJUSTMENTS – PART I

Management measures for the groundfish seasons are set by the Council with the general understanding these measures will likely need to be adjusted within the biennial management period to attain, but not exceed, the optimum yields. This agenda item will consider inseason adjustments to ongoing 2010 and 2011 fisheries. Potential inseason adjustments include adjustments to Rockfish Conservation Area boundaries and adjustments to commercial and recreational catch limits. Adjustments are, in part, based on catch estimate revisions and the latest information from the West Coast Groundfish Observer Program.

The Groundfish Management Team and the Groundfish Advisory Subpanel will meet prior to this agenda item to discuss and recommend inseason adjustments to 2010 and 2011 groundfish fisheries. The Council will consider this agenda item on Saturday, November 6, 2010, and make recommendations as necessary. If further consideration of inseason adjustments is warranted, Agenda Item H.6, Consideration of Inseason Adjustments – Part II, is scheduled for Monday, November 8, 2010.

Council Action:

1. **Consider information on the status of 2010 and 2011 fisheries and adopt preliminary or final (if possible) inseason adjustments as necessary.**

Reference Materials:

1. None.

Agenda Order:

a. Agenda Item Overview **Kelly Ames**
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Adopt Preliminary or Final Recommendations for Adjustments to 2010 and 2011 Groundfish Fisheries (Part II on Monday if necessary)

PFMC
10/13/10

ENFORCEMENT CONSULTANTS REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS – PART I

As you know, state law cannot be less restrictive than Federal regulations. As a result of Council action in June 2010, the California Fish and Game Commission adopted the Council recommendations for 2011 specs. At this meeting, the Council has been informed that due to a NOAA ruling, the June recommendations will not be implemented, thus optimum yields (OYs) will revert back to 2010 Federal regulations beginning January 2011.

This situation creates significant enforcement conflict for State Officers who also possess the authority to enforce Federal law. It also causes public confusion due to the inconsistency between published state fishing regulations and the more restrictive Federal rules. For example, in Southern California beginning January 1, 2011, vessels will be able to fish out to 60 fathoms whereas Federal regulations prohibit fishing outside of 40 fathoms. Effective March 1, 2011, within the Cowcod Conservation Area (CCA), under state law fishers will be able to retain shelf rockfish when Federal regulations prohibit possession of these species. Also under state law, anglers will be able to fish out to 30 fathoms in the CCA, but Federal regulations restrict fishing to within 20 fathoms in the CCA.

PFMC
11/06/10

GROUNDFISH ADVISORY SUBPANEL REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS-PART I

The Groundfish Advisory Subpanel (GAP) and the Groundfish Management Team (GMT) discussed potential inseason actions for both the 2010 and 2011 seasons. Following this initial inseason discussion the GAP wishes to recommend the following:

2010 Conception area fixed gear sablefish (South of 36° N Latitude)

The GAP supports the GMT Option 3, which allows for a 300-pound monthly limit for open access (OA) and a 1,300-pound weekly limit for limited entry for the month of December 2010. The GAP believes the 300-pound OA limit maintains access to the directed Blackgill fishery while still allowing for any associated incidental catch of blackcod that might occur. We have no desire to close the limited entry (LE) fishery and though the 1,300-pound weekly limit is much smaller than the current limit it will still allow for a directed blackcod fishery for that LE sector. It should be noted that the GAP does not believe the OA sector will catch all of its available fish, thus should leave a residual buffer. The GAP also requests affirmation to the Nature Conservancy landing all of its exempted fishing permits sablefish set-aside for 2010 as there may be a small residual there.

2010 Fixed gear sablefish (North of 36° N Latitude)

The GAP supports the GMT option for OA to increase the limits to 400 daily, 1,500 weekly, and 4,500 by/monthly.

The GAP OA representatives had requested an increase previously this year as catch has been running lower than usual so would greatly appreciate an increase especially for those few full time OA blackcod fishermen. It is believed that these larger limits will not induce effort shift as many boats have already geared up for the upcoming Dungeness crab fishery. Boats from south of Conception would be precluded from fishing this larger northern limit if they had already landed sablefish in November below 36° N Latitude (per NMFS staff guidance).

For the 2011 inseason adjustments, in particular for the Conception area sablefish fixed gear fishery, the GAP requests guidance from the Council on how to allocate between the OA/LE sectors prior to any further GAP discussions for setting trip limits. The GAP believes that a long-term formal allocation between LE and OA could help this process go more smoothly and recommends the Council begin an allocation process.

Immediate action must be taken to address the projected shortfall in darkblotch. Instead of a complete closure of all whiting and non-whiting trawl fisheries the GAP recommends the following:

• Current OY	330 mt
• Current projection	382.7 mt

Proposed corrective Actions:

• Move outside line of the RCA north of 40 10 to 250 fathoms	37 mt
• Reduce scorecard for shoreside whiting by	6 mt
• Reduce Catcher Processor scorecard by	1 mt
• Voluntarily reducing non-whiting trawl limit to 1000 pounds Is projected to conservatively contribute	15 mt
• Projected catch thru 12/31/10 after corrective actions	323.7 mt

Depending on fishing decisions by the Mothership sector an additional contribution of 0.5 mt may be available.

The only other option is closing all whiting and non-whiting trawl on December 1 which will create an immediate rush by the fleet to catch the current higher limit to maximize their revenue. Providing an opportunity for a voluntary limit reduction by the non-whiting trawl fleet is expected to result in greater savings than a complete closure.

PFMC
11/06/10

GROUNDFISH MANAGEMENT TEAM REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS FOR 2010 PART 1

The Groundfish Management Team (GMT) considered the most recent information on the status of ongoing fisheries and requests from industry and provides the following recommendations for 2010 inseason adjustments. Last week, the GMT also received the 2009 Total Mortality Report from the West Coast Groundfish Observer Program (WCGOP). The GMT received guidance from NMFS Northwest Region (NWR) regarding timing of implementation of inseason recommendations from this meeting. NMFS anticipates working to get any adjustments recommended by the Council as quickly as possible. Therefore, the GMT modeled for adjustments to fishery management measures beginning on December 1, 2010 through December 31, 2010.

Scorecard Updates

The GMT received an update from The Nature Conservancy (Agenda Item H.4.a., Attachments 2 and 3) on the Morro Bay/Port San Luis Exempted Fishing Permit and note that the total darkblotched take (1.0 mt) was less than the set aside of 1.5 mt. In our review of the scorecard we also discovered that, within the fixed gear rows in the scorecard, the “Other Fixed Gear” row was a holdover from a previous modeling configuration and is redundant. That row is no longer included in the scorecard.

Treaty Tribal Fisheries

The GMT received an update that the Makah Tribe is requesting an increase in their take of yellowtail rockfish in the directed midwater fishery beyond what is currently in regulations. The regulations currently state, “Yellowtail rockfish taken in the directed tribal mid-water trawl fisheries are subject to a cumulative limit of 180,000 lb (81,647 kg) per 2-month period for the entire fleet. Landings of widow rockfish must not exceed 10 percent of the weight of yellowtail rockfish landed, for a given vessel, throughout the year. These limits may be adjusted by the tribe inseason to minimize the incidental catch of canary rockfish and widow rockfish, provided the average 2-month cumulative yellowtail rockfish limit does not exceed 180,000-lb (81,647 kg) for the fleet.” This allows the flexibility to catch fish as they are available by pooling the limits across periods for a total fleet limit of 1,080,000 lbs (490 mt). The fishery to date has exceeded this total fleet limit due to high availability of yellowtail with relatively low associated bycatch of canary. Likewise, widow rockfish catch, which is capped at 10 percent of landings of yellowtail by weight, is higher than what is in the scorecard. Catch is currently at 1,119,879 lbs (508 mt) for yellowtail, 45.5 mt for widow, and 2.8 mt for canary.

The Tribe is proposing to test the use of electric jig machines in the midwater fishery to minimize bycatch. The jigs will be used to look for bycatch species of concern (i.e. widow and canary rockfish) prior to setting the trawl net. Trip limits will be 40,000 lbs/trip for yellowtail, 150 lbs/trip for canary, and widow will remain at 10 percent of yellowtail landings by weight each trip. Makah Fisheries Management estimates that an additional 169 mt of yellowtail, 15.2

mt of widow, and 0.2 mt of canary will be needed to prosecute the fishery (Table 1). Given bycatch rates from this season in both the yellowtail and whiting fisheries, the total additional impact toward OYs will be for yellowtail and widow rockfish (i.e. given lower than expected bycatch of canary in the whiting fishery, there is no impact to the residual in the scorecard). All trips and tows will be observed and the data reported for use by the non-treaty trawl fleet through the Council. Assuming the fishery is successful, information on the use of jigs to test for potential bycatch may provide greater access to yellowtail for some in the rationalized trawl fleet.

Table 1. Estimated additional impacts from Makah fisheries on widow and canary rockfish from both the yellowtail midwater trawl and whiting fisheries and associated scorecard values.

Yellowtail Midwater Trawl Fishery	Yellowtail	Widow	Canary
Preseason estimates	490	40.0	3.6
Current impacts	508	45.5	2.8
MW with test	677	60.6	3.8
Total additional OFS		**20.6**	**0.2**
Whiting Fishery			
Preseason estimates		5	4.3
Current impacts		8.8	1.3
Total additional OFS		**3.8**	**-3.0**
Total additional scorecard impacts (i.e. impacts to the residual)		**24.4**	**0.0**

The GMT notes that yellowtail is currently under its optimum yield (OY) by a considerable amount. Catch in the latest Quota Species Monitoring (QSM) Best Estimate Report (BER) is estimated to be 877 mt out of an OY of 4,562 mt (19 percent). Both the midwater directed fishery and the tribal whiting fishery are over their estimates of widow in the scorecard for the year. However, similar to yellowtail, there is a considerable amount of widow in the scorecard that is unlikely to be harvested. There is a residual of 142.4 mt of widow in the scorecard. Also, the majority of impacts come from the limited entry (LE) whiting trawl sectors in addition to the Makah fisheries. Currently, they are estimated to have taken only 45.3 mt for the shorebased fleet and 37.2 mt for the at-sea sectors (92 mt total). The scorecard has bycatch limits of 67 mt for the motherships, 95 mt for the catcher-processors, and 117 mt for the shorebased fishery (279 mt total). As such, the residual in the scorecard is likely a very conservative estimate of available widow compared to the OY.

Commercial Fisheries

Limited Entry Trawl Fishery

Fishing impacts through the end of 2010 were projected for target and overfished species of the LE non-whiting trawl sector using the Trawl Bycatch Model (Hastie 2003). The model was run using historical landings, depth and geographic area information from fish tickets and logbook data from 2005 through April 2009, as well as bycatch and discard rate estimates from WCGOP over the same time period. The model was updated from the Pacific Fishery Information Network (PacFIN) QSM BER through Period 5, on November 1, 2010.

The 2009 total mortality report was just released, and it reveals that darkblotched rockfish exceeded the OY by 15 mt last year. Moreover, LE non-whiting trawl exceeded its 2009 projection by 72 mt. According to current projections, action would need to be taken to prevent exceeding the darkblotched OY for 2010 as well.

The trawl model is under-projecting darkblotched rockfish impacts. The current QSM BER shows 129 mt of darkblotched has already been landed through Period 5, while trawl model is projecting only 78 mt landed through Period 5. A contributing factor to this is that the bycatch and discard data in the model, by necessity, lags one year behind, thus the most recent fishing behavior cannot be taken into account. More specifically, the amount of fishing effort as shallow as 150 fm (where darkblotched encounters are more frequent) is likely underrepresented, especially in times where trip limits were very low, which produces increased discards relative to landings.

In light of this information, trawl model projections for 2010 were adjusted to increase accuracy. This was accomplished by expanding the projected landings from the model up to that of the QSM best estimate, and applying an average discard rate (50% of total darkblotched mortality) from recent total mortality reports. The fact that the reduction will likely go into effect mid-way through Period 6 was accounted for in the adjustment. Projected impacts under the no-action alternative (A1) are presented in Table 2, and corresponding management measures are presented in Table 3.

With an additional expected 38 mt of darkblotched landings projected for Period 6, this places the adjusted projection for trawl impacts in 2010 at 335.2 mt. The current OY is 330 mt. If no action is taken, darkblotched could go over the OY by 52.7 mt for 2010.

We estimate an 11 percent reduction in total darkblotched impacts, down to 298mt by moving the RCA deep line out to 250 fm and closing the slope rockfish and darkblotched trawl fishery in the North during Period 6. The most influential factor over darkblotched total mortality has been fishing depth; however, under this action alternative (A2), closing slope rockfish in the North during Period 6 is included to reduce 2010 darkblotched impacts as well. Projected impacts under A2 are presented in Table 4, and the corresponding management measures are in Table 5.

Table 2. **Alternative 1, No Action** projected LE trawl impacts for 2010 (**petrale cutouts open in Period 6, status quo limits**) for management areas north and south of 40°10’ N. latitude.

A1NA Species/Mgmt. group	**North**	**South**	**Total**	**OY/HG/Al.**	**Total-HG**	**Total/HG**
Canary	8.0	0.9	8.9			
POP	95.5	0.1	95.6			
Darkblotched	310.4	24.8	**335.2**			
Widow	7.8	5.3	13.1			
Bocaccio	1.4	21	22.4			
Yelloweye	0.2	0.0	0.2			
Cowcod	0.0	0.2	0.2			
Sablefish N of 36° N. lat.	2,276.0	335.7	2,611.6	2,955	-343	88%
Longspine N. of 34° 27' N. lat.	1,280.5	241.4	1,521.9	2,129	-607	71%
Shortspine N. of 34° 27' N. lat.	1,069.1	138.5	1,207.6	1,567	-359	77%
Dover	10,215.1	1,034.0	11,249.1	16,093	-4,844	70%
Arrowtooth	5,076.6	7.1	5,083.7	9,755	-4,671	52%
Petrale	711.3	150.9	862.3	1,140	-277	76%
Other flatfish	839.8	114.4	954.2	4,685	-3,731	20%
Slope rockfish	322.1	164.6	486.7	1160/626		

Table 3**. Alternative 1, No Action** cumulative LE groundfish trawl trip limits and RCA boundaries, as adopted at the September, 2010 Council meeting (petrale cutouts are open in Period 6).

	RCA lines (fm)		2-month cumulative-poundage limits							
2-month period	shallow	deep	sable-fish	long-spine	short-spine	Dover sole	petrale sole	arrow-tooth	other flatfish	slope rockfish
N. of 40°10' N lat.										
Large/small footrope limits										
1	75	150	20,000	24,000	18,000	110,000	9,500	150,000	110,000	6,000
2	75	200	20,000	24,000	18,000	110,000	9,500	150,000	110,000	6,000
3	75	150/200	24,000	24,000	18,000	110,000	9,500	150,000	110,000	2,000
4	100	150/200	21,000	24,000	18,000	100,000	6,300	150,000	100,000	2,000
5	75	200	24,000	26,000	20,000	110,000	6,300	180,000	110,000	4,000
6	75	**200-pco**	24,000	26,000	20,000	110,000	6,300	180,000	110,000	4,000
Selective gear limits										
1	75	150	9,000	5,000	5,000	65,000	9,500	90,000	90,000	
2	75	200	9,000	5,000	5,000	65,000	9,500	90,000	60,000	
3	75	150/200	9,000	5,000	5,000	65,000	9,500	90,000	60,000	
4	100	150/200	9,000	5,000	5,000	65,000	6,300	90,000	60,000	
5	75	200	10,000	5,500	5,500	70,000	6,300	100,000	70,000	
6	75	**200-pco**	10,000	5,500	5,500	70,000	6,300	100,000	70,000	
38° - 40°10' N lat.										
1	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	15,000
2	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	15,000
3	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	15,000
4	100	150	21,000	24,000	18,000	100,000	6,300	10,000	100,000	15,000
5	100	150	24,000	26,000	20,000	110,000	6,300	12,000	110,000	15,000
6	100	150	24,000	26,000	20,000	110,000	6,300	12,000	110,000	15,000
S. of 38° N lat.										
1	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	55,000
2	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	55,000
3	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	55,000
4	100	150	21,000	24,000	18,000	100,000	6,300	10,000	100,000	55,000
5	100	150	24,000	26,000	20,000	110,000	6,300	12,000	110,000	55,000
6	100	150	24,000	26,000	20,000	110,000	6,300	12,000	110,000	55,000

Note: "**200-pco**" denotes the modified 200 fm seaward RCA with **petrale cutouts open**. Chilipepper rockfish trip limit = 17,000 pounds/2 months.

Table 4**. Alternative 2,** projected LE trawl impacts for 2010, under the potential inseason action, with deep RCA boundaries in the North at 250 fathoms for Period 6, and slope rockfish in the North closed.

A2 Species/Mgmt. group	North	South	Total	OY/HG/Al.	Total-HG	Total/HG
Canary	8.0	0.9	8.9			
POP	86.8	0.1	86.9			
Darkblotched	272.9	25.4	**298.3**			
Widow	7.0	5.3	12.3			
Bocaccio	1.4	21	22.4			
Yelloweye	0.2	0.0	0.2			
Cowcod	0.0	0.2	0.2			
Sablefish N of 36° N. lat.	2,254.8	335.7	2,590.4	2,955	-365	88%
Longspine N. of 34° 27' N. lat.	1,279.4	241.4	1,520.8	2,129	-608	71%
Shortspine N. of 34° 27' N. lat.	1,056.3	138.5	1,194.7	1,567	-372	76%
Dover	10,066.2	1,034.0	11,100.2	16,093	-4,993	69%
Arrowtooth	4,963.5	7.1	4,970.6	9,755	-4,784	51%
Petrale	673.5	150.9	824.4	1,140	-315	72%
Other flatfish	830.4	114.4	944.7	4,685	-3,740	20%
Slope rockfish	317.7	164.6	482.3	1160/626		

Table 5. **Alternative 2,** potential LE management measures for 2010 after inseason adjustment, with deep RCA boundaries in the North at 250 fathoms for Period 6, and slope rockfish in the North closed.

			2-month cumulative-poundage limits							
2-month period	RCA lines (fm) shallow	deep	sable-fish	long-spine	short-spine	Dover sole	petrale sole	arrow-tooth	other flatfish	slope rockfish
N. of 40°10' N lat.										
Large/small footrope limits										
1	75	150	20,000	24,000	18,000	110,000	9,500	150,000	110,000	6,000
2	75	200	20,000	24,000	18,000	110,000	9,500	150,000	110,000	6,000
3	75	150/200	24,000	24,000	18,000	110,000	9,500	150,000	110,000	2,000
4	100	150/200	21,000	24,000	18,000	100,000	6,300	150,000	100,000	2,000
5	75	200	24,000	26,000	20,000	110,000	6,300	180,000	110,000	4,000
6	75	**250**	24,000	26,000	20,000	110,000	6,300	180,000	110,000	**0**
Selective gear limits										
1	75	150	9,000	5,000	5,000	65,000	9,500	90,000	90,000	
2	75	200	9,000	5,000	5,000	65,000	9,500	90,000	60,000	
3	75	150/200	9,000	5,000	5,000	65,000	9,500	90,000	60,000	
4	100	150/200	9,000	5,000	5,000	65,000	6,300	90,000	60,000	
5	75	200	10,000	5,500	5,500	70,000	6,300	100,000	70,000	
6	75	**250**	10,000	5,500	5,500	70,000	6,300	100,000	70,000	
38° - 40°10' N lat.										
1	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	15,000
2	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	15,000
3	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	15,000
4	100	150	21,000	24,000	18,000	100,000	6,300	10,000	100,000	15,000
5	100	150	24,000	26,000	20,000	110,000	6,300	12,000	110,000	15,000
6	100	150	24,000	26,000	20,000	110,000	6,300	12,000	110,000	15,000
S. of 38° N lat.										
1	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	55,000
2	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	55,000
3	100	150	22,000	24,000	18,000	110,000	9,500	10,000	110,000	55,000
4	100	150	21,000	24,000	18,000	100,000	6,300	10,000	100,000	55,000
5	100	150	24,000	26,000	20,000	110,000	6,300	12,000	110,000	55,000
6	100	150	24,000	26,000	20,000	110,000	6,300	12,000	110,000	55,000

After updating the scorecard with the best estimates of darkblotched impacts for all fisheries, it appears that the only fisheries where darkblotched savings could be achieved are the limited entry whiting trawl fishery and the sablefish fixed-gear fishery. Sablefish have a projected 4.5 mt impact assuming full utilization of available sablefish; however, any savings from inseason action in the last month of the year is not quantifiable and would likely be relatively small. In other words, there is no way to quantify with existing models how much of the 4.5 mt of darkblotched are caught in a given region based on available limits and Rockfish Conservation Area (RCA) boundaries. For the whiting fishery, NMFS NWR issued an inseason notice on November 4 showing that to date the shorebased fishery has taken 54,767 mt out of 65,938 mt (83 percent of their whiting after reallocation). They have taken 3.9 mt of the 10.5 mt darkblotched limit. The mothership fishery has taken 35,714 mt out of 37,679 mt (95 percent after reallocation) and 5.5 mt out of the 6 mt darkblotched limit. The catcher-processor fishery has taken 44,392 mt out of 53,379 mt (83 percent after reallocation) and 2.3 mt of the 8.5 mt darkblotched limit. This means that approximately 13.3 mt of darkblotched savings could be achieved by closing all limited entry whiting fishery sectors immediately.

This closure combined with the proposed inseason changes for LE non-whiting trawl the OY would be projected to be exceeded by 2.5 mt in the scorecard.

Sablefish Daily Trip Limit (DTL) Fisheries North of 36° N. lat.

LIMITED ENTRY

The Council considered changes to the limited entry fixed gear sablefish DTL fishery trip limits in September, but did not recommend changes because increases to the trip limits in this fishery had recently increased, and new landings data were not available determine the effect on landings of those trip limit increases.

Landings data through September 30, 2010 indicate that catches in this limited entry DTL fishery are higher than previous years (Figure 1). This is a result of recent attempts to better predict landings for this fishery using a trip-limit based model (see Agenda Item G.4.b, Supplemental GMT Report, November 2009). Nonetheless, modeling efforts indicate that if trip limits remain at Status Quo (i.e., bimonthly trip limits of 8,000 lbs / 2 months), 88 percent of the allocation, or 281 mt, may be landed by December 31, 2010.

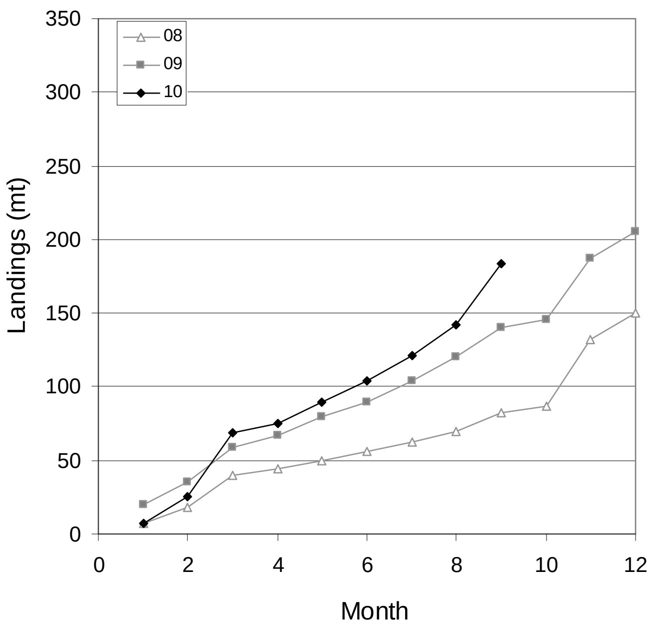


Figure 1. Monthly landings (mt) of sablefish for the Limited Entry Sablefish DTL fishery north of 36^{o} N. latitude for 2008, 2009 and 2010. Data shown for 2010 are only through September 30 (= 184 mt). Allocations for this fishery were 276 mt for 2008, 351 mt for 2009 and 321 mt for 2010.

The GMT recently updated a model to help predict landings of sablefish for this limited entry sablefish DTL fishery (see Appendix A, Description of Projection Models, 2011-2012 Groundfish Harvest Specifications, Draft Environmental Impact Statement). This model was used to predict landings for the remainder of 2010. We projected that landings through October 31, 2010 may total 206 mt. The limited entry sablefish model was then used to develop trip limits for the remainder of the year (Period 6) that may result in 88 percent (based on Status Quo trip limits) and 100 percent of the annual allocation (Table 6). Hence, the GMT provides the Council with two trip-limit options for this fishery, which are shown in Table 5.

Table 6. Trip limit options for the Limited Entry Fixed Gear sablefish DTL fishery north of 36° N. latitude. Projected landings and the percent of the allocation taken are shown.

Option	Weekly trip limit (lbs)	Bimonthly trip limit (lbs)	Projected landings (mt)	Percent of allocation landed
1 (Status Quo)	1,750	8,000	281	88%
2	2,250	10,300	321	100%

Although the projection model only uses bimonthly trip limits to predict landings, weekly trip limits for status quo (1,750 lbs/week) and option 2 (2,250 lbs/week, expanded by proportion) are included in Table 6.

There is uncertainty in this model that is used for projecting landings. This model represents an average projection of landings, given certain levels of bimonthly trip limits. Therefore, actual landings are likely equal to or higher than projected landings half of the time, and conversely, equal to or lower than projections half of the time.

The GMT discussed the pros and cons of modeling projected landings to hit the allocation (100 percent) or modeling to come close to the allocation (i.e., within 90 percent). The GMT concluded that at this point in the season, it may be best to set trip limits using some buffer (i.e., Option 1). This conclusion was made because, without a buffer, there is a 50 percent likelihood of equalling or exceeding the allocation for 2010, and there would be no opportunity for further adjustments. The GMT concluded that it may be most appropriate to model landings to hit the allocation (100 percent) earlier in the season, however, because there would be subsequent opportunities to make proper adjustments for remaining below the allocation. Based on this logic, the GMT recommends the bimonthly trip limits shown in Option 1 (Status Quo), that is, retaining the current 8,000 lbs/month trip limit. **The GMT also recommends increasing the limited entry fixed gear sablefish weekly trip limit from 1,750 lbs/wk to 2,000 lbs/wk north of 36° N. latitude; as pointed out in the DEIS analysis, the weekly trip limit has no impact on model output whereas increasing this limit provides an economic and potential safety benefit to the fishermen (e.g., provides the potential of obtaining the bimonthly limit in four trips rather than four plus a small fifth trip).**

OPEN ACCESS

The Council also considered changes to the open access fixed gear sablefish DTL fishery trip limits in September, but did not recommend changes because the impacts of planned reductions to the trip limits south of 36° N. latitude were uncertain. It was anticipated that those reductions may have resulted in a shift of effort from the south to the north. This anticipated effort shift did not occur, and as a result, landings data through September 30, 2010 indicate that the landings rate (per month) for the open access DTL fishery north of 36° N. lat. is too low to reach the 2010 allocation of 529 mt for 2010 (Figure 2). Modeling efforts indicate that if trip limits remain at Status Quo (i.e., bimonthly trip limits of 2,750 lbs / 2 months), only 81 percent of the allocation, or 435 mt, may be landed by December 31, 2010 (see below).

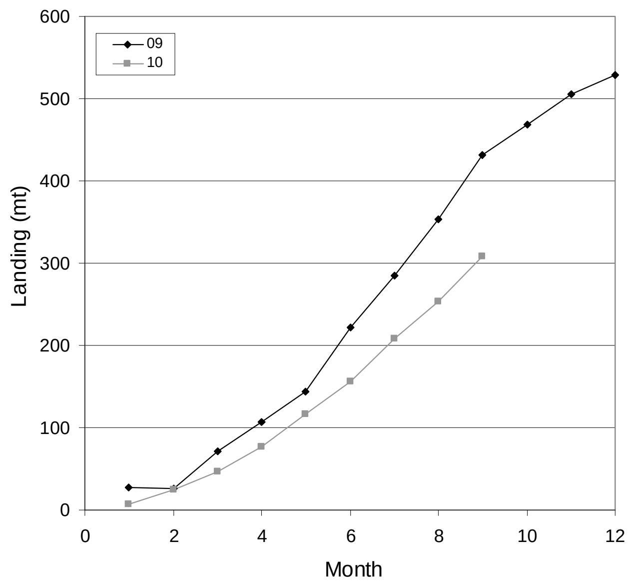


Figure 2. Monthly landings (mt) of sablefish for the Open Access Sablefish DTL fishery north of 36° N latitude for 2009 and 2010. Data shown for 2010 are only through September 30 (= 308 mt). Allocations for this fishery were 578 mt for 2009 and 529 mt for 2010.

The GMT recently updated a model to help predict landings of sablefish for this open access sablefish fishery (see Appendix A, Description of Projection Models, 2011-2012 Groundfish Harvest Specifications, Draft Environmental Impact Statement). This model was used to predict landings for the remainder of 2010. We projected that landings through October 31, 2010 may total 338 mt. The open access sablefish model was then used to develop trip limits for the remainder of the year (Period 6) that are estimated to result in 81 percent (based on Status Quo trip limits), 90 percent and 100 percent of the annual allocation (Table 6). Hence, the GMT provides the Council with three trip-limit options for this fishery, which are shown in Table 6.

Table 7. Trip limit options for the open access fixed gear sablefish DTL fishery north of 36° N. latitude. Projected landings and the percent of the allocation taken are shown.

Option	Daily trip limit (lbs)	or One landing per week (lbs)	Bimonthly trip limit (lbs)	Projected landings (mt)	Percent of allocation landed
1 (Status Quo)	300	950	2,750	435	82%
2	400	1,500	4,500	474	90%
3	500	2,500	7,000	529	100%

Although the model only uses bimonthly trip limits to predict landings, we included daily, monthly, and bimonthly trip limits in Table 2 for status quo (300 lbs/day, or one landing per week not to exceed 950 lbs, and cumulative bimonthly limit of 2,750 lbs/2 months) and for options 2 and 3 (see Table 6).

As described above, for the LE model, projections represent the most likely average response; some bimonthly landings will be higher than projections whereas others will be lower. In addition, increasing the trip limit for this open access fishery can be risky, because potential effort (number of boats fishing) is not capped. The unpredictable nature of this fishery is made apparent by comparing annual landings with annual allocations. Landings have exceeded the annual allocation for this open access sablefish fishery north of 36° N. lat. for three of the past six years. Finally, if trip limits are severely reduced south of 36° N. lat. (see below), there is the possibility of effort shifting from the south to the north. It is important to note, however, that this effort shift may not be as extreme as one might expect, because vessels will be required to adhere to the most restrictive trip limits for the two month period for which they began fishing, and it is likely that trip limits will become most restrictive south of 36° N. lat. during Period 6 after vessels begin fishing (see below).

As described above for the limited entry sablefish DTL fishery, the GMT discussed the pros and cons of modeling projected landings to hit the allocation (100 percent) or modeling to come close to the allocation (i.e., within 90 percent). Since this is the final Council meeting for 2010, the GMT concluded that it may be best to set trip limits using some buffer because we will have no further opportunity to reduce limits if landings exceed expectations. However, since we don't anticipate a large increase in effort (see above), and because this regulation will not go into effect until approximately the middle of the sixth Period, the GMT suggests that some increase may be accommodated with low likelihood of exceeding the allocation**. Hence, the GMT recommends increasing the open access sablefish trip limits north of 36° N. latitude for Period 6 from Status Quo to those trip limits shown for Option 2 in Table 7 (400 lbs/day or one landing not to exceed 1, 500 lbs/week, and a bimonthly cumulative limit of 4,500 lbs/2 months).**

Sablefish Daily Trip Limit (DTL) Fisheries South of 36° N. lat.

The Council at their September meeting recommended and NMFS implemented considerable reductions to the Open Access sablefish trip limits in the DTL fishery south of 36° N. lat. on

October 1, 2010. Also on October 1, 2010 modest reductions were made to the limited entry fixed gear sablefish DTL fishery trip limits. With these changes, combined with projected catch from EFP fisheries, the GMT anticipated that the catch of sablefish south of 36° N. lat. would be kept within the 1,258 mt OY for sablefish south of 36° N. lat.

Landings data through October 29, 2010 indicate that LE and OA (Open Access) removals were higher for the month of July than previously modeled back in September. The increase in landings is most likely due to late landing receipts. California Department of Fish and Game (CDFG) staff indicates that the normal 6-8 week time lag for data entering PacFIN has increased to almost 12 weeks and as a result, it has been difficult to monitor this fishery.

The GMT updated its September analysis with the most recent PacFIN data for the month of July and further refined the analysis to remove all EFP data from projections (to avoid any double counting). The analysis the GMT conducted in September was based on calculating catches through October (based on state landings receipts and projected catches), adding in the EFP catches for the year, and constructing trip limits for the remaining amount for each sector based on proportions of historical catch (40 percent LE:60 percent OA). Based on the updated analysis and assuming 100% attainment of the OY concurrent with previous methodology, the Conception area OY is expected to be exceeded by 61 mt without inseason action. The OA sector alone is expected to exceed their allotment by 57.4 mt.

The GMT examined the following options for Council consideration to keep catches within the 2010 OY.

Option 1 – close both LE and OA effective December 1, 2010.

In their September analysis, the GMT emphasized that the estimated number of landings and vessel participation for the months of August and September are considerably uncertain (Agenda Item I.2.b, Supplemental GMT Report, September 2010). At this time the GMT cannot verify those projections because very few data are available for those months. The GMT also estimated that fewer OA vessels would remain in this area based on the lower trip limits that were implemented on October 1, 2010. To date, very few vessels have left the area. If the Council chose to close both LE and OA effective December 1, 2010, the GMT estimates a buffer of 20.1 mt buffer would be left available resulting in approximately 98 percent attainment of the OY (Table 8).

Table 8. Conception area sablefish landings assuming a December 1, 2010 closure for both sectors

2010 landings, Jan-July	419.0
EFP cap for 2010	300.0
sub total	719.0
2010 OY	1258
SABL remaining for Aug-Dec	539.0
40% LE	215.6
LE landings Aug-Nov	166.8
LE available for Dec	48.8
60% OA	323.4
OA landings Aug-Nov	352.1
OA available for Dec	-28.7
Total Residual	**20.1**

Option 2 – some opportunity for LE, close OA effective Dec 1, 2010.

Under Option 2, the GMT examined providing an opportunity for the LE fishery while maintaining a closure of the OA fishery effective December 1, 2010. Industry indicates that shortspine thornyhead are an important target strategy at this time of the year and need sablefish to prosecute this fishery. It is the GMT's understanding that many of the participants in the OA fishery may have left by December 1, 2010 to prosecute other fisheries such as lobster and crab. Under a trip limit of 1,800 lb/week, the LE fishery is projected to take 18.7 mt, leaving a 1.4 mt residual (Table 9).

Table 9. Conception area sablefish landings assuming a reduced trip limit for LE and closure of the OA fishery effective December 1, 2010.

2010 landings, Jan-July	419.0
EFP cap for 2010	300.0
sub total	719.0
2010 OY	1258
SABL remaining for Aug-Dec	539.0
40% LE	215.6
LE landings Aug-Nov	166.8
LE for Dec	18.7
60% OA	323.4
OA landings Aug-Nov	352.1
OA for Dec	0
Total Residual	**1.4**

Option 3 – minimal opportunities for both sectors.

The Council may choose to maintain a minimal opportunity for both sectors through the end of the year and share the remaining residual equally (10 mt each) as shown in Table 10. This would result in trip limits for the LE sector of 1,300 lb/week and 300 lb/month for open access for the month of December only.

Table 10. Conception area sablefish landings assuming a minimal trip limit for both sectors effective December 1, 2010.

2010 landings, Jan-July	419.0
EFP cap for 2010	300.0
sub total	719.0
2010 OY	1258
SABL remaining for Aug-Dec	539.0
40% LE	215.6
LE landings Aug-Nov	166.8
LE for Dec	10
60% OA	323.4
OA landings Aug-Nov	352.1
OA for Dec	10
Total Residual	**0.1**

GMT Recommendations:

1. **Consider the Makah request to increase impacts to yellowtail and widow while testing jig machines to reduce bycatch in the rockfish directed midwater trawl.**
2. **For LE non-whiting trawl, adjust seaward trawl RCA boundary to 250 fm and close minor slope rockfish limit beginning December 1, and request voluntary slope rockfish avoidance by the fleet in the meantime to stay within the darkblotched OY.**
3. **For LE whiting trawl consider adjustments to sector-specific darkblotched bycatch limits and/or closure as needed to stay within the darkblotched OY.**
4. **For LE DTL north of 36° N lat. consider increasing the weekly trip limit from 1,750 lbs/wk to 2,000 lbs/wk.**
5. **For OA DTL north of 36° N lat. consider increasing trip limits for Period 6 from Status Quo (Table 6) to 400 lbs/day or one landing not to exceed 1, 500 lbs/week, and a bimonthly cumulative limit of 4,500 lbs/2 months.**
6. **For OA and LE sablefish south of 36° N lat. consider limit changes and/or closures as to stay within the OY.**

Projected mortality impacts (mt) of overfished groundfish species for 2010 updated based on updated tribal impacts, bottom trawl, Pacific whiting trawl, and EFPs under No Action.

Fishery	Bocaccio b/	Canary	Cowcod	Dkbl g/	POP	Widow	Yelloweye
Limited Entry Trawl - Non-whiting	**22.4**	**8.9**	**0.2**	**335.2**	**95.6**	**13.1**	**0.2**
Limited Entry Trawl - Whiting							
At-sea whiting motherships a/		3.3		6.0	**13.6**	67.0	0.0
At-sea whiting cat-proc a/		4.8		8.5	**2.4**	95.0	0.0
Shoreside whiting a/		5.9		10.5	**15.7**	117.0	0.0
Tribal whiting		**1.3**		0.0	7.2	**8.8**	0.0
Tribal							
Midwater Trawl		**2.8**		0.0	0.0	**45.5**	0.0
Bottom Trawl		0.8		0.0	3.7	0.0	0.0
Troll		0.5		0.0	0.0		0.0
Fixed gear		0.3		0.0	0.0	0.0	2.3
Fixed Gear Sablefish	0.0	2.5	0.0	4.5	0.4	0.0	0.9
Fixed Gear Nearshore	0.3	3.6	0.0	0.0	0.0	0.3	1.1
Open Access: Incidental Groundfish	0.8	1.7	0.0	15.0	0.0	3.3	0.3
Recreational Groundfish e/							
WA		20.9					5.4
OR						1.0	
CA	67.3	22.9	0.3			6.2	2.7
EFPs	11.0	1.3	0.2	**1.0**	0.1	11.0	0.2
Research: Includes NMFS trawl shelf-slope surveys, the IPHC halibut survey, and expected impacts from SRPs and LOAs.							
	2.0	4.5	0.2	2.0	2.0	5.7	0.5
TOTAL	103.8	85.9	0.9	382.7	140.7	373.9	13.6
2010 OY f/	288	105	4.0	330	200	509	14
Difference	184.2	19.1	3.1	-52.7	59.3	135.1	0.4
Percent of OY	36.0%	81.8%	22.5%	116.0%	70.4%	73.5%	97.1%
Key		= either not applicable; trace amount (<0.01 mt); or not reported in available data sources.					

a/ Non-tribal whiting values for canary, darkblotched, and widow reflect bycatch limits for the non-tribal whiting sectors. All other species' impacts are projected from the GMT's whiting impact projection model. The Council may elect to change these bycatch limits when setting final whiting management measures in March 2010 or under any inseason action at any of their future meetings.

b/ South of 40°10' N. lat.

e/ For California, values in scorecard represent projected impacts for all species except canary and yelloweye rockfish, which are the prescribed harvest guidelines. For Washington and Oregon, the canary value represents the HG. For yelloweye, the value represents projected impacts for the Oregon fishery (2.8 mt) through the end of the year and the Washington share of the HG (2.6 mt).

f/ 2009 and 2010 OYs are the same except for darkblotched (291 mt in 2010), POP (200 mt in 2010), and widow (509 mt in 2010).

g/ Regulations specify a commercial harvest guideline of 288 mt (see 75FR39178)

Projected mortality impacts (mt) of overfished groundfish species for 2010 updated based on updated tribal impacts, bottom trawl, Pacific whiting trawl with GMT-recommended inseason action.

Fishery	Bocaccio b/	Canary	Cowcod	Dkbl g/	POP	Widow	Yelloweye
Limited Entry Trawl - Non-whiting	22.4	8.9	0.2	**298.3**	95.6	13.1	0.2
Limited Entry Trawl - Whiting							
At-sea whiting motherships a/		3.3		**5.5**	13.6	67.0	0.0
At-sea whiting cat-proc a/		4.8		**2.3**	2.4	95.0	0.0
Shoreside whiting a/		5.9		**3.9**	15.7	117.0	0.0
Tribal whiting		**1.3**		0.0	7.2	**8.8**	0.0
Tribal							
Midwater Trawl		**3.8**		0.0	0.0	**60.6**	0.0
Bottom Trawl		0.8		0.0	3.7	0.0	0.0
Troll		0.5		0.0	0.0		0.0
Fixed gear		0.3		0.0	0.0	0.0	2.3
Fixed Gear Sablefish	0.0	2.5	0.0	4.5	0.4	0.0	0.9
Fixed Gear Nearshore	0.3	3.6	0.0	0.0	0.0	0.3	1.1
Open Access: Incidental Groundfish	0.8	1.7	0.0	15.0	0.0	3.3	0.3
Recreational Groundfish e/							
WA		20.9					5.4
OR						1.0	
CA	67.3	22.9	0.3			6.2	2.7
EFPs	11.0	1.3	0.2	1.0	0.1	11.0	0.2
Research: Includes NMFS trawl shelf-slope surveys, the IPHC halibut survey, and expected impacts from SRPs and LOAs.							
	2.0	4.5	0.2	2.0	2.0	5.7	0.5
TOTAL	103.8	86.9	0.9	332.5	140.7	389.0	13.6
2010 OY f/	288	105	4.0	330	200	509	14
Difference	184.2	18.1	3.1	**-2.5**	59.3	120.0	0.4
Percent of OY	36.0%	82.8%	22.5%	100.8%	70.4%	76.4%	97.1%
Key		= either not applicable; trace amount (<0.01 mt); or not reported in available data sources.					

a/ Non-tribal whiting values for canary, darkblotched, and widow reflect bycatch limits for the non-tribal whiting sectors. All other species' impacts are projected from the GMT's whiting impact projection model. The Council may elect to change these bycatch limits when setting final whiting management measures in March 2010 or under any inseason action at any of their future meetings.

b/ South of 40°10' N. lat.

e/ For California, values in scorecard represent projected impacts for all species except canary and yelloweye rockfish, which are the prescribed harvest guidelines. For Washington and Oregon, the canary value represents the HG. For yelloweye, the value represents projected impacts for the Oregon fishery (2.8 mt) through the end of the year and the Washington share of the HG (2.6 mt).

f/ 2009 and 2010 OYs are the same except for darkblotched (291 mt in 2010), POP (200 mt in 2010), and widow (509 mt in 2010).

g/ Regulations specify a commercial harvest guideline of 288 mt (see 75FR39178)

PFMC
11/6/10

GROUNDFISH MANAGEMENT TEAM REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS FOR 2011

On November 3, 2010 the National Marine Fisheries Service (NMFS) published a proposed rule to implement biennial harvest specifications and management measures for 2011 and 2012 (75 FR 67810). As the Council knows, NMFS also announced that the implementation of the final 2011-2012 harvest specifications and management measures ("the SPEX") will be delayed. With this delay, harvest specifications and management measures that were in place during 2010 will remain in place as described below in "Interim Rollover of 2010 Regulations" until they are superseded.

This rollover in regulations requires re-visitation of the scorecard because the catch sharing reflected in the current scorecard is based on the cancellation of exempted fishing permits (EFPs), research projects, and other adjustments made inseason. This appears to be an issue primarily for yelloweye. In addition, there are certain inseason adjustments needed irrespective of the SPEX delay based on information gained after the Council identified its final preferred 2011 alternatives in June.

Given time constraints, our priority here is on obtaining additional guidance from the Council for the second inseason session on Monday (Agenda Item H.6) We have other issues we were unable to include here and will bring those forward on Monday.

The primary guidance we are looking for at this time includes:

1. Yelloweye catch sharing:
    - First, consideration of "off the top" deductions for research and EFPs;
    - Second, guidance on catch sharing between fishery sectors (primarily the trawl, non-nearshore, nearshore, and recreational sectors fisheries).

2. Conception area sablefish
    - Council guidance on the catch sharing percentages to use for the open access and limited entry sectors.

<u>**Interim Rollover of 2010 Regulations**</u>

FMP section 5.4 provides that "*in the absence of an approved recommendation at the beginning of the biennial fishing period, the current specifications in effect at the end of the previous biennial fishing period will remain in effect until modified, superseded, or rescinded.*"

This means that the acceptable biological catch (ABC)/optimum yield (OY) tables from the end of 2010 will still be on the books, so the harvest specifications for all species at the start of 2011 will be the same as what was in place at the end of 2010. For example, this means: 14 mt yelloweye rockfish OY; 1,200 mt petrale sole OY; 105 mt canary rockfish OY; 330 mt darkblotched rockfish OY with a 288 mt harvest guideline; etc.

NMFS has informed the Council that they still expect the trawl fishery will be managed as a rationalized fishery in 2011. Regulations that were linked to the 2011-12 SPEX that implemented portions of the rationalized trawl fishery will be implemented by NMFS in an emergency rule (e.g. issuing quota pounds, etc.).

Non-trawl commercial fishery management measures that are scheduled for a calendar year are in the Federal trip limit tables. So the non-trawl commercial fishery management measures that will "rollover" for January 1, 2011 are those that were in place in the 2010 trip limit table schedule.

Recreational fishery management measures are a little different when they rollover compared to the trip limit tables since they are written out in paragraph form. The Federal regulations regarding recreational fisheries will not change and will "rollover" for January 1, 2011 from what was in place for the 2010 recreational fisheries for WA, OR, and CA.

Considering Yelloweye Catch Sharing - Scorecard Adjustments

The GMT made the following adjustments to the post-September inseason 2010 scorecard for yelloweye:

Scientific Research, EFPs and Other "Off-the-top" Deductions
The 2011 EFP(s) have different anticipated yelloweye rockfish impacts than those in 2010. As the Council heard this morning, Oregon Department of Fish and Wildlife (ODFW) has decided to cancel their EFP to collect biological data on yelloweye rockfish. This reduces the projected impacts from EFPs in 2011 (pending final approval by the Council) from 0.2 mt to 0.1 mt of yelloweye rockfish. The GMT further notes that the 0.1 mt cap of yelloweye for the Regulatory Flexibility Analysis (RFA) EFP has already been issued for 2011.

As for research catch, the International Pacific Halibut Commission (IPHC) survey takes the highest yelloweye catches. In 2010, the Council had planned for 1.1 mt of yelloweye but the survey only encountered 0.3 mt. ODFW and Washington Department of Fish and Wildlife (WDFW) both canceled their enhanced portions of that survey reducing 2010 research catch by 2.0 mt from what had been planned at the beginning of the year. In June the Council decided to set aside 1.0 mt each for the ODFW and WDFW surveys for 2011, 1.1 mt for the IPHC survey, and 0.2 mt for other research projects. ODFW informed the GMT that they do not have funding to restart the survey in 2011. WDFW is still in the planning stages but has indicated that they are still interested in conducting research. We are also aware that IPHC is considering conducting pilot studies or other modifications to their survey, and impacts to yelloweye from those activities are unknown at this time. These changes are still in the discussion stages and we have not received information to use to evaluate potential catch. The 1.0 mt reduction from the ODFW cancellation may be sufficient yet we just do not know at this time. The decision on IPHC research for 2011 will likely be issued at their annual meeting in January.

The GMT calculated what would be available to fisheries after the off the top deductions are made to the OY (Table 1).

Table 1. Breakdown of "off the top" deductions for yelloweye at the start of 2011

2010 OY	14
EFP	0.1
Tribal	2.3
Research	3.3
OA Incidental	0.2
Sum	5.9
Fishery HG	14 - 5.9 = **8.1 mt**

Considering Yelloweye Allocations (Trawl, Non-trawl) and Non-trawl Catch Sharing – Scenario Used for Analysis

The GMT is requesting guidance regarding how to allocate yelloweye rockfish to the trawl fishery given the SPEX delay. Again, NMFS is issuing quota pounds for the start of 2011 by emergency rule. The scorecard currently identifies a projected impact of 0.3 mt for the trawl sector. The Council's preferred 2011 catch sharing would have doubled that number to 0.6 mt.

The Trawl Individual Quota (TIQ) program introduces a completely different incentive and management structure than the current trip limit system. Given this, we do not know whether the Council would have chosen to allocate 0.3 mt to the fishery given the choice or would have looked to transfer more fish to the sector from elsewhere.

In case the Council wishes to visit this issue, we present an alternative catch apportionment. We chose to base this alternative apportionment scheme on the March 2010 scorecard. The yelloweye OY was at 17 mt OY yet our assumption was that the sharing proportions reflect the Council's policy choices better than the June 2010 scorecard. The June 2010 scorecard reflects sharing under a 14 mt OY yet the Council's options in balancing that scorecard were limited given that the adjustments occurred half way through the fishing year. In addition, 2 mt in savings was achieved by cancellation of the ODFW and WDFW enhanced rockfish surveys. We did not want to assume the Council would have made these same choices had the reduction occurred at the start of a fishing year.

From the proportions in the March 2010 scorecard, we reduced each sector proportionally to bring total impacts down from 17 mt to 14 mt (Table 2). We of course intend these sharing proportions just as a starting point for analysis and as a focus for additional guidance from the Council. We provide discussion of the changes to the rollover management measures that would likely be necessary to keep projected impacts to yelloweye rockfish in each sector below a 14 mt yelloweye OY.

Table 2. Proposed Catch sharing agreement for 2011 given the delay in the 11-12 Spex.

	% by Sector based on March 2010 scorecard	Projected Impacts (mt) March 2010	Targets Under a 14 mt OY
Limited Entry Non-Whiting Trawl	6%	0.6	0.5
Non-nearshore*	8%	0.9	0.7
Nearshore Fixed Gear	12%	1.3	1.0
Washington Recreational (HG)	25%	2.7	2.0
Oregon Recreational (HG)	22%	2.4	1.8
California Recreational (HG)	26%	2.8	2.1
		10.7	**8.1**

Yelloweye in Commercial Fisheries

Limited Entry Rationalized Trawl Fishery

Under the proposed catch sharing agreement in Table 2, the rationalized trawl fishery would be issued quota pounds based on a 0.5 mt allocation of yelloweye rockfish. At this time, we do not have much information to share in analyzing the different impact of 0.5 mt and 0.6 mt. Assuming an average weight of 2.5 kg per yelloweye, 0.1 mt equals 40 fish. As the Council well knows, the fleet has expressed concern and uncertainty about how low yelloweye allocations affect trawling opportunities on the shelf. If the projected impact of 0.3 mt is an accurate representation of average catch in trawl fishery, it is good to keep in mind that deviations from the average do occur. In the TIQ fishery, these deviations from average will have consequences for individual participants and possibly for the fleet as a whole. As we understand it, the Council's preferred 2011 amount of 0.6 mt was made in recognition of this uncertainty and meant to provide some buffer. We may be able to provide some analysis of how estimated quota pound (QP) allocations may change between these different amounts for Monday.

Non-Nearshore Fixed Gear

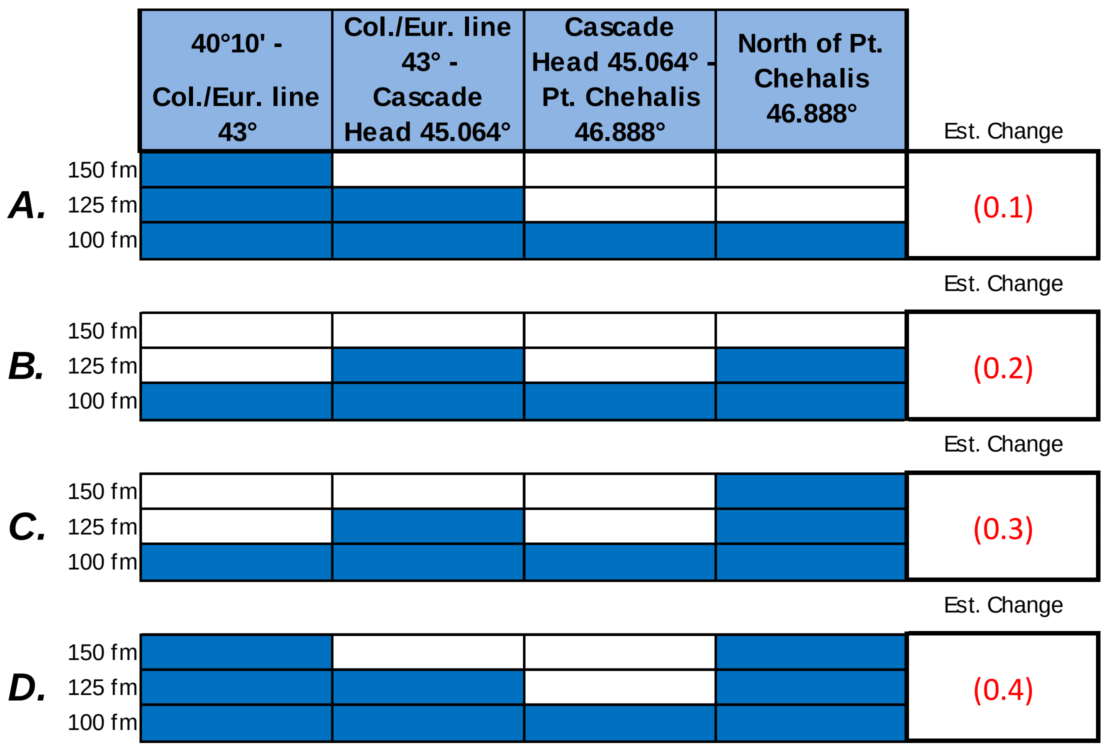
The catch sharing scenario in Table 2 would allow 0.7 mt of yelloweye for the non-nearshore fixed gear fisheries (i.e., limited entry and open access fisheries operating seaward of the non-trawl RCAs). Our projected impact for this fishery is also 0.7 mt. This impact is based on the 2010 regulations carrying over and the 125 fm line being left in place between the Columbia-Eureka line (43º N. lat.) and Cascade Head (45º 03' 83" N. lat), except on days when the directed halibut fishery is open and the line is 100 fm.

The Council's preferred alternative for the 2011-2012 SPEX would have moved the seaward Rockfish Conservation Area (RCA) line in this area from 125 fm to 100 fm (opened some fishing area) and increased the projected impact to 0.9 mt. The 2011 preferred alternative would also assign 1.3 mt to the non-nearshore sectors to accommodate management uncertainty and unexpected bycatch in this fishery.

The 0.7 mt and 0.9 mt projections are based on the Council's preferred 2011 sablefish annual catch limit (ACL), which is 23 percent lower than the 2010 sablefish OY. These impacts would increase if the sablefish harvest is based on the 2010 sablefish OY to 0.9 mt (with 125 fm line) and 1.0 mt (with all areas at 100 fm).

To reduce yelloweye projected bycatch further, the Council would need to push the RCAs seaward in one or more areas. Table 3 identifies a set of options for incremental reductions to yelloweye bycatch.

Table 3 Estimated reductions in projected yelloweye bycatch (mt) in the non-nearshore fixed gear fisheries under four alternative configurations of the seaward non-trawl RCA boundary. The shaded areas indicate depths closed by the non-trawl RCA seaward boundary.



Considering community impacts, the least restrictive 100 fm line itself places much of the shelf off limits to fixed gear vessels. Sablefish is the most valuable stock in this fishery and still accessible seaward of this line. As the Council has considered in the past, the line does not come without costs to fishing communities (e.g., less fishing area and lost access to certain stocks, increased travel distances and gear competition with other fixed gear and trawl vessels). These impacts are qualitative and cannot be quantified (e.g. they cannot be detected looking just at sablefish ex-vessel revenues). Increasing the size of the non-trawl RCA from this 100 fm baseline would increase those costs, yet again, the increase cannot be analyzed in detail, especially without logbook data from this fishery. In the Draft Environmental Impact Statement

(DEIS) we assume the sectors can and will harvest the full allocation of sablefish even with RCA boundaries pushed to the most constraining configuration analyzed: 150 fm coastwide.

As the Council has discussed several times since the non-trawl RCA was put into place, the dogfish fishery would be impacted by moving the non-trawl RCA beyond 100 fm. This fishery has occurred in the area north of Pt. Chehalis, and while the 100 fm line reduced access to dogfish, a 125 fm or 150 fm line would be expected to eliminate the fishery altogether. Landings have been down in 2009 and 2010 because the major dogfish buyer in Bellingham, WA closed down. The Council heard public testimony in June indicating that there is still interest in targeting dogfish. With the non-trawl RCA in place, the movement of the fish means that the fish are available to the fishery mainly between February and June.

Management Uncertainty for the Non-Nearshore Fishery - New Bycatch Data Suggests Increased Impacts

The 2009 Total Mortality report shows that this fishery is one of two where we under projected yelloweye bycatch in that year. We had projected 0.9 mt and the estimated catch was 1.3 mt (a 44 percent difference). The Council's 2011 preferred alternative of a 17 mt yelloweye annual catch target (ACT) allowed for the 1.3 mt allocation to non-nearshore fixed gear and would just accommodate this management uncertainty. A 14 mt OY is more likely to require management measures inseason (i.e. a 150 fm line or closure).

Tables 10 and 11 in the Total Mortality report shows that the increased yelloweye catch came from the open access and non-primary LE sectors. The tables show that those two sectors encountered yelloweye in 2009 at double the rate we use in the model.

The Total Mortality report does not break out bycatch rates into the area and depth stratifications that we need to update the model. We have therefore not been able to thoroughly evaluate the effect of the increased 2009 catch. Roughly speaking, a 44 percent increase in catch would raise the projected yelloweye impact from 0.7 mt to 1.0 mt. We will need to closely examine these new rates when we receive them in January and incorporate them into the model for Council's consideration in March. We typically average bycatch rates across years, especially when coverage rates are small, so it is unlikely that the project impact will increase by that full 44 percent. We may be able to examine the increased catches more closely for Monday.

Although we are unsure where and at what depth the most yelloweye bycatch was observed, we have some indication that the highest yelloweye catch occurred in the Columbia/Eureka to Cascade Head and north of Pt. Chehalis areas. These two areas have shown the highest yelloweye catches in these non-nearshore fisheries.

Limitation on Our Ability to Analyze Inseason Adjustments in the Non-Nearshore Fishery

The non-nearshore model is not set up for inseason adjustment. We do not have projections of how catch is spaced throughout the year. Another limitation on our ability to analyze seasonally variable RCA configurations relates to the fact that participants in the LE primary fishery can harvest their sablefish any time within the season (Apr 1 – Oct 31). With this flexibility, participants may choose to fish the bulk of their tiers during the time of year when the RCA boundaries are less restrictive.

If the Council were to start out with more restrictive RCAs and liberalize later in the season, we could bracket the projected impact with the impacts from the two RCA configurations. We would expect the impact to be lower than the impact from the less constraining RCA scenario yet could not be able to quantify how much lower.

Nearshore Fixed Gear

The amount of yelloweye rockfish available to the nearshore fishery based on the March scorecard scenario is 1.0 mt. Due to time and workload constraints the GMT did not conduct any individual model runs to achieve 1.0 mt. Several analyses were conducted as part of the 2011-12 biennial specifications (Appendix C, Integrated Alternative Analyses) which could be accommodated by 1.0 mt of yelloweye. There are many "moving parts" to the nearshore fishery model, including the sharing agreement between Oregon and California. Importantly, the estimates of landings listed in Appendix C could vary for each state depending on the yelloweye catch sharing agreement between the states Generally speaking, Oregon nearshore fisheries would see reductions to landed catch ranging from approximately 30-50 percent depending on the individual species. The 20 fm depth restriction will remain in place between 42° N. lat. and 43° N. lat.

Depending on the yelloweye catch sharing agreement chosen, a 20 fm depth restriction may have to be implemented coastwide for California. At a minimum, the 20 fm depth restriction must remain in place between 40°10' N. lat. and 43° N. lat. Reductions to landed catch may be necessary to stay within yelloweye impacts, but those reductions will not be as severe as Oregon and may vary by area. In certain instances increased opportunities may be afforded for California due to the differences in bycatch rates between the states.

Any reductions or increases to landed catch in the nearshore fishery are based on the no action alternative analyzed under the 2011-12 SPEX, which is equivalent to the June 2010 inseason action and where projected yelloweye impacts are 1.1 mt.

Yelloweye in Recreational Fisheries

Washington

Washington is still in the process of evaluating the yelloweye harvest impacts for 2010 relative to projected impacts modeled during the 2009-2010 biennial cycle.

At the June Council meeting the GMT analyzed management measures necessary to keep coastwide yelloweye harvests under a 14 mt OY. At the time, Washington recreational harvest projections were updated to reflect more conservative estimates of discard mortality implemented in 2010 than were used in the 2009-2010 management model and resulted in revised projected impacts for yelloweye rockfish of 1.9 mt. The Washington portion of the yelloweye harvest guideline was kept at 2.7 mt to address yelloweye harvests that were tracking somewhat higher than in 2009. Yelloweye impacts updated to reflect catch through September 2010 are at 2.0 mt. Given the low recreational fishery effort in October this amount is likely close to the final estimate for 2010. The final yelloweye rockfish impacts under identical management measures in 2009 were 1.6 mt. The difference in the yelloweye impacts seen in

2009 and 2010 point to management uncertainty and the difficulty in projecting precise harvest impacts from year to year, even when management measures haven't changed.

There are different options for addressing the rollover of 2010 regulations to 2011 under a reduced yelloweye OY of 14 mt. Under the yelloweye catch apportionment described in Table 2 the Washington recreational harvest guideline for 2011 would be 2.0 mt; a reduction of 0.7 mt from the 2009-2010 harvest guideline used to project yelloweye impacts under current management measures. Depth restrictions are the most effective tool for managing yelloweye impacts and are used to a greater extent in Washington's central and northern areas where yelloweye rockfish encounter rates are the highest. If the Washington recreational fishery is required to manage to a 2.0 mt harvest guideline for 2011 more restrictive depth restrictions for the Washington north coast area may be necessary to keep yelloweye impacts under the harvest guideline. Current management measures for the north coast (Marine Areas 3 and 4) already restrict the recreational fishery to the area seaward of 20 fathoms from May 21 through September 30. Management measures analyzed for the 2011-2012 biennial management cycle show reduced projected impacts for yelloweye rockfish by implementing the 20 fathom depth restriction earlier in the year. More restrictive management measures would reduce fishing opportunity for anglers traveling to remote coastal ports along the north coast and could reduce the number of fishermen willing to travel to these areas under reduced opportunities. Businesses in these areas rely heavily on income generated by recreational anglers that come to the north coast during the relatively short recreational fishing season in Washington.

Oregon

Depth management is the main tool used for controlling yelloweye rockfish catch in the Oregon recreational fishery. Changes to the bag limit in the Oregon recreational model have minimal affect on the projected yelloweye rockfish impacts.

Table **4** shows projected yelloweye impacts for the Oregon recreational fishery under various depth restrictions scenarios, to stay within the 1.8 mt yelloweye allocation in Table 2. Projections were made assuming a Pacific halibut quota equivalent to the 2010 level. Any depth restriction scenario that limits the recreational fishery to inside of 20 fathoms will effectively close all fishing grounds out of several Oregon ports, including Garibaldi, Gold Beach and Port Orford (Agenda Item B.7.b., Supplemental ODFW Report 1, June 2010). The closure of these grounds will greatly reduce the number of people fishing, both private and charter, out of these ports, which in turn affects the fishing related and support businesses in these and other coastal communities in Oregon. Allowing fishing to occur out to 30 or even 25 fathoms opens up some grounds out of those ports; however, it will concentrate effort into smaller areas than already occur under the seasonal 40 fathom restrictions outlined in the proposed 2011-2012 harvest specifications and management measures rule. Additionally, having a year round depth restriction (no all depth fishing January through March and October through December) eliminates opportunities to fish for lingcod, a highly sought after and underutilized species in the Oregon recreational fishery.

Table 4. Projected Oregon recreational seasonal depth scenarios to meet the 1.8 mt yelloweye allocation currently projected by the GMT.

Alternative	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	YE impacts
Status quo (no action)	All-depth				40-fm					All-Depth			2.4
1	40-fm				30-fm					40-fm			1.8
2	30-fm												1.7
3	25-fm									All-Depth			1.7
4	25-fm								40-fm				1.6
5	25-fm												1.6

California

Season and depth restriction diagrams (Figure 1) as well as corresponding impacts on overfished species (Table 5) and non-overfished species (Table 6) under the March Scorecard Scenario are provided below. The reduction in the yelloweye rockfish ACL from 20 mt with a 17 mt ACT to 14 mt as in 2010 will result in a reduction in the California recreational harvest guideline from 3.1 mt under the Council adopted apportionment to 2.1 mt under the March Scorecard Scenario. Depth restrictions North of Point Arena where yelloweye are more common are already at the shallowest possible depth of 20 fm, thus reductions in season lengths are the only viable option for reducing impacts. Continuation of the 14 mt OY would require a reduction in the season lengths in Management Areas north of Point Conception compared to both the status quo 2010 season length and the 2011 season adopted by the Council in June.

The reduced harvest guideline (HG) will necessitate a one month reduction in season length in the already highly constrained three-month season in the Mendocino Management Area from the status quo 2010 season and Council adopted season for 2011, resulting in the loss of the last two weeks in July and the first two weeks of August. This represents a 33 percent reduction in season length which would have severe adverse implications for fishing opportunity, closing the season during the prime summer fishing months of July and August adding to the previous loss of late August through December fishing opportunity since 2007. The season in the Northern Management would remain the status quo in 2010, but would be 1.5 months shorter than the 2011 season adopted at the June Council meeting. In the San Francisco Management Area, the season length would have to be reduced by one half month relative to the Status Quo season three months relative to the season adopted by the Council for 2011 at the June meeting. This forgone period includes the closure of the November and December season overlap with the open season for Dungeness crab, enhancing fishing opportunity and driving increased fishing effort that provides much needed income to fishing communities during the holiday season. The season length in the Central Management Areas would increase a half month relative to the status quo, though it would be a month shorter than the season adopted by the Council which would have allowed anglers to target both crab and groundfish in December, which as described above is important to fishing communities. The reductions in season length would result in reduced income to fishing communities and the impacts would be felt by many of the fishing communities identified in the community vulnerability analysis as those most dependent on groundfish for their economic well being, including Fort Bragg, Shelter Cove, Eureka, Trinidad and Crescent City. In no Management Area does the groundfish fishing season provide for year round fishing opportunity, which is a stated management goal in the Fishery Management Plan intended to provide year round employment to those dependent on the fishery for their income.

Given the current 2010 yelloweye rockfish catch tracking, the California recreational fishery is expected to remain well below 2.1 mt in 2010 and sufficient residual remains to accommodate the season length adopted for the 2011-2012 season by the Council in June as projected through the remainder of the year. The lower than projected impacts are in part due to outreach efforts, which will continue in future seasons, though catch may vary from year to year or from projections based on other unpredictable factors such as weather, fuel prices and other fishing opportunities that are not accounted for in the projection model. With weekly catch tracking for yelloweye rockfish, action could be taken inseason if necessary to close the fishery to prevent an overage. If the 20 mt ACL and 17 mt ACT adopted by the Council were in place prior to the June Council meeting, providing a 3.1 mt HG for the California recreational fishery, this would decrease the likelihood that inseason action, which would be disruptive to vacation and business plans, would be necessary.

Figure 1. California recreational fishing season and depth restrictions under the March Scorecard Scenario and the difference in season length compared to the Status Quo and Council adopted season for 2011.

Management Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Months	Change vs. No Action (Months)	Change vs. Council Adopted (Months)
Northern	CLOSED				May 14 – Sep 15<20fm								4.0	0	-1.5
Mendocino	CLOSED				May 14 - Jul 15 <20 fm								2	-1	-1
San Francisco	CLOSED					Jun 11 – Oct 15 <30 fm							4.0	-0.5	-3
Central	CLOSED				May – Nov < 40 fm								7	0.5	-1
Southern	CLOSED		Mar – Dec < 60 fm										10	0	0

Table 5. Projected impacts to overfished species in the California recreational fishery under March Scorecard Scenario.

Species	HG (mt)	Projected Impacts (mt)	2011 Percent HG
Yelloweye Rockfish	2.1	2.1	100%
Bocaccio	66.3	54.7	82%
Cowcod	0.3	0.17	57%
Canary Rockfish	22.9	8.0	35%
Widow Rockfish	NA	9.3	NA

Table 6. Projected impacts to non-overfished species in the California recreational fishery under the March Scorecard Scenario.

Species	Projected Impacts
Black Rockfish	143.9
Blue Rockfish	164.5
Cabezon	21.6
California Scorpionfish	63.8
California Sheephead	31.7
Greenlings	9.4
Lingcod	182.9
Minor Nearshore North	7.8
Minor Nearshore South	326.1

Commercial Fisheries Guidance

Limited Entry and Open Access Sablefish Fishery South of 36° N. lat.
The 2010 trip limit structure for both sectors were modified at the September 2010 meeting and on October 1, 2010 lower trip limits were implemented for both sectors due to the higher than anticipated effort in the area. However, modeling the 2011 fishery in the south will be simplified somewhat because The Nature Conservancy exempted fishing permit currently operating in this area will not be renewed for 2011, and so sablefish landings under an EFP will not have to be tracked separately from the fishery impacts.

If the Council chose not to modify trip limits at this meeting, the trip limits in place on January 1, 2010 would remain in effect (Limited entry = 400 lb/day, 1,500 lb/week; Open access = 400 lb/day,1,500 lb/week, not to exceed 8,000 lb/2 months). GMT believes that more conservative limits would be warranted for 2011 because under the 2010 trip limit structure effort was higher than anticipated and large restrictions were necessary inseason to keep the catch below the sablefish OY.

The GMT recommends taking action now because if the Council chose to wait to reduce trip limits at the March or April meeting (assuming May 1, 2010 implementation), we estimate that both sectors in combination could take 62 percent of the non-trawl allocation within the first two periods. In such an eventuality, the Council would need to react with drastic reductions to trip limits to maintain year round fishing opportunities.

In addition, our modeling of trip limits is complicated by the fact that sablefish has not been formally allocated between the limited entry and open access sectors in the Conception Area. We need a specific numerical target to design trip limits for each sector and therefore **request Council guidance to determine the catch sharing percentages to use for each sector**. In September 2010 inseason, the Council adopted trip limits using a historical catch sharing of 40 percent for the limited entry and 60 percent for open access. If the Council chose to use that same catch sharing for 2011, the trip limit for limited entry would be 1,800 lb/week (no daily limit) and open access would be 300 lb/ day, 950 lb/week, not to exceed 2,900 lb/2 months. The GMT notes that these calculations assume an open access fleet of 50 vessels and could be an underestimate of actual impacts.

Commercial Fisheries – Preview of Second Inseason

As noted in the introduction, we plan on bringing several issues to the Council during second inseason that we could not get to here. We preview some of these here in case the Council wishes to give guidance now, add issues we may have missed, identify issue that should be held off until the March meeting, etc.

Limited Entry Rationalized Trawl Fishery

For second inseason we will discuss:

- the potential need for adding trip limits for non-IQ species in the NMFS emergency rule.

- the RCA boundaries that the Council adopted for the rationalized trawl fishery and whether those should be implementation by NMFS for January 1, 2011 given the higher than anticipated catch of darkblotched rockfish in 2009 and 2010.

Limited Entry Fixed Gear Fishery for Sablefish North of 36° N. lat.
Models used to project landings by the Limited Entry Fixed Gear fishery for sablefish suggest that if used for 2011, that the sablefish allocation for this fishery will be exceeded by 6 percent. The GMT may bring forth trip limit options for this fishery during the second session of inseason.

Open Access Fixed Gear Fishery North of 36^o N. latitude
Two approaches were used to predict landings by the Open Access Fixed Gear Fishery. One was based on landings rate during 2010 (which was used in the 2011-2012 DEIS), whereas the other used a model developed by the GMT. The former approach, which assumes no change in trip limits between 2010 and 2011 suggests that the 2011 harvest guideline will not be exceeded. The latter approach, however, suggests that the 2011 harvest guideline would be exceeded by 15 percent if we apply 2010 trip limits. Hence, the GMT plans to provide the Council with trip limit options for this fishery during the second Inseason.

Minor Nearshore Rockfish North of 40°10' N. lat.
In 2009, the minor nearshore rockfish trip limit was restructured in response to new stock assessments for black and blue rockfish. The black rockfish component of the trip was increased from 6,000 lb/2 months to 7,000 lb/2 months and blue rockfish was included in with the lower sub-limit for other nearshore rockfish species (1,200 lb/month) to keep catches within the statewide blue rockfish harvest guideline. With these management measures in place, total catch of minor nearshore rockfish north of 40°10' N. lat. was 64.1 mt. We will be exploring whether these same management measures in 2010 will continue to keep catches within the proposed 2011 ACL of 99 mt.

Limited Entry Fixed Gear Fishery for Sablefish South of 36° N. lat.
During 2010 we removed the daily limits for sablefish in this fishery beginning in September to increase flexibility for fishermen. The GMT could consider revisions to the rolled-over trip limits in this fishery to maintain the flexibility that was given during 2010. Why? Why not? One reason we may want to keep conservative trip limits is because we have had challenges controlling sablefish catch, particularly in the OA South fishery. But with there being no formal allocations for sablefish in this area the GMT may need to consider what actions will be necessary to prevent exceeding the OY, and these actions could affect the limited entry fixed-gear (LEFG) fishery.

GMT Recommendations

1. **Give guidance on:**
    a. **Yelloweye "off the top" adjustments for research and EFPs**
    b. **Yelloweye catch sharing between sectors to begin January 1, 2010 under a 14 mt OY**

c. **Catch sharing of Conception Area sablefish between limited entry and open access sectors**
d. **Other analyses the Council would or would not like to see for the second inseason session**

PFMC
11/6/10

Agenda Item H.4
Situation Summary
November 2010

FINAL REVIEW OF EXEMPTED FISHING PERMITS (EFPs) FOR 2011

Exempted fishing permits (EFPs) provide a process for testing innovative fishing gears and strategies to substantiate methods for prosecuting sustainable and risk-averse fishing opportunities. The Council considered four EFP applications at their September meeting and preliminarily adopted one for public review. The Council will do a final review of the Oregon Department of Fish and Wildlife (ODFW) EFP application at this meeting in consideration of recommending this EFP to the National Marine Fisheries Service (NMFS).

The proposed EFP is one sponsored by the ODFW that seeks to collect biological data from yelloweye rockfish encountered in the Oregon sport charter fishery (Attachment 1). Since the objective of this EFP is to collect biological samples to inform future yelloweye assessments, the Council recommended the 0.06 mt yelloweye impact associated with this EFP be taken from the research set-aside rather than the EFP set-aside established in the 2011-12 biennial specifications process.

Attachment 2 contains the 2010 progress report from the Morro Bay/Port San Luis EFP designed to test the effectiveness of a regional community fishing association to manage a groundfish fishery with hook-and-line and trap gears in central California by vessels using limited entry trawl permits. A second report examines the feasibility of electronic monitoring systems deployed during the Morro Bay/Port San Luis EFP to accurately capture fixed gear fishing activities and catch compared to self reporting in vessel logbooks and records compiled by a human observer (Attachment 3).

At its September meeting, the Council discussed that static EFP set asides are required in order to calculate the trawl and non-trawl allocations necessary to support a rationalized trawl fishery (see 75FR60868, definition of fishery harvest guideline). Therefore, EFP set asides need to be estimated during the biennial process in order to calculate the allocations for each year. However, depending on the incoming proposals, the estimated amounts may be insufficient to accommodate EFP activities. Further, in recent years, due to workload issues at NMFS, there have been challenges with timely issuance of permits. Therefore, there was some discussion about the possibility of two-year EFPs, timed appropriately with the biennial process. If the Council is interested to scope this issue further, the topic could be raised under Agenda Item K.4, Future Council Meeting Agenda and Workload Planning, and scheduled for further discussion.

Under this agenda item, the Council should review the ODFW yelloweye EFP application, consider public and advisory body comments, and consider recommending this 2011 EFP to NMFS.

Council Action:

1. **Consider the ODFW EFP application for 2011 and provide a final recommendation to NMFS.**
2. **Review the Morro Bay/Port San Luis EFP progress reports.**
3. **Consider recommending future action to modify the EFP process.**

Reference Materials:

1. Agenda Item H.4.a, Attachment 1: Application to the Pacific Fishery Management Council for an EFP to collect biological information from yelloweye rockfish encountered in the Oregon sport charter fishery.
2. Agenda Item H.4.a, Attachment 2: Morro Bay/Port San Luis Exempted Fishing Permit Progress Report for the Pacific Fishery Management Council.
3. Agenda Item H.4.a, Attachment 3: Morro Bay/Port San Luis Exempted Fishing Permit Electronic Monitoring Pilot Project Progress Report for the Pacific Fisheries Management Council.

Agenda Order:

a. Agenda Item Overview **Kelly Ames**
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Adopt Final Recommendations for EFPs

PFMC
10/19/10

Application to the Pacific Fishery Management Council (PFMC) for an Exempted Fishing Permit (EFP) to collect biological information from yelloweye rockfish encountered in the Oregon sport charter fishery.

Date of Application
8/25/2010

Applicants
Oregon Department of Fish and Wildlife
Marine Resources Program
2040 SE Marine Science Drive
Newport, OR 97365

Contact: Troy Buell
541-867-0300 x225

Statement of purpose and goals
The purpose of this EFP is to improve the quantitative assessment of U.S. west coast yelloweye rockfish stocks by collecting biological information such as length, weight, age, sex, and maturity from yelloweye rockfish encountered in Oregon's recreational groundfish fishery. This will be achieved by allowing a select group of Oregon charter vessels to retain a limited number of yelloweye rockfish while conducting groundfish trips under the current regulatory structure. The retained yelloweye rockfish will be surrendered to an Oregon Department of Fish and Wildlife (ODFW) biologist at the point of landing for biological sampling. Yelloweye rockfish will be donated to food share programs after data collection whenever possible.

This EFP application is similar to an application initially submitted by ODFW in June 2009 (Agenda Item E.8, Attachment 8, June 2009), and approved by the PFMC in September 2009 for the 2010 recreational groundfish season. However, the National Marine Fisheries Service (NMFS) has not issued the actual permits for 2010 as of August 20, 2010, due to increased workload associated with the implementation of the trawl rationalization program. Due to the seasonal nature of the fishery, if permits are issued at this late date it is unlikely that sampling will be successful in 2010.

If the project is successful in 2011, data collections maybe expanded to include samples from the commercial nearshore fishery.

Justification for EFP
Bycatch of overfished yelloweye rockfish currently constrains utilization of healthy groundfish stocks in many U.S. west coast fisheries, including recreational, commercial fixed gear, and shelf trawl fisheries. It is anticipated that ACLs will remain relatively low for the foreseeable future, and that as the stock recovers fishery encounter rates will increase leading to additional constraints in these and other fisheries. Retention of yelloweye rockfish has been prohibited in most fisheries since 2004, which has extremely limited the catch-at-age data available for this important species. Considering the lack of

any fishery independent survey that is adequate for indexing the abundance or describing the age distribution of this species, it may be very difficult to detect stock rebuilding if and when it does occur. Novel methods of data collection are needed to address the wholesale lack of recent data informing age structured stock assessments of yelloweye rockfish. While we recognize that the data collected under this EFP will represent only part of the geographic and depth range of the species, we will attempt to design this project to adequately describe the age distribution of yelloweye rockfish encountered in Oregon's recreational groundfish fishery. Consultations with NMFS stock assessment scientists familiar with yelloweye rockfish indicated that even limited catch-at-age data may be valuable for detecting population trends considering the current lack of data.

Broader significance and fleetwide applicability
Fleetwide application may be unnecessary if precise and unbiased information can be obtained using a select group of vessels. However, this data collection method could be expanded to other States and fishing fleets if the information proves valuable in assessing the status of yelloweye rockfish.

Number of vessels covered under this EFP
No more than 15 vessels would be invited to participate under this EFP in the first year. This number of vessels was selected to allow participation of 2-3 vessels in each major recreational fishing port or port group on the Oregon coast, with the goal of providing geographic coverage of the major recreational groundfish fishing grounds shoreward of the 40 fathom regulatory closure.

Description of species and amounts
Although an EFP is legally required to carry out this research, this project is outside the traditional uses of EFPs. The additional yelloweye rockfish mortality associated with this project is most appropriately categorized as research mortality. ODFW requests that the Groundfish Management Team (GMT) explore the feasibility of counting additional mortality from this project against the research set aside for yelloweye rockfish rather than the EFP set aside.

Vessels fishing under this EFP will target primarily black rockfish and lingcod, and are likely to have incidental catches of blue, canary, china, copper, quillback, yellowtail, vermilion, and other nearshore rockfishes, cabezon, and kelp greenling. Catch per angler statistics from Oregon charter vessel observer data indicate 125-150 trips will be needed to achieve the sampling goal of 100 yelloweye. Since vessels fishing under this EFP will be subject to all concurrent regulations except for the prohibition of retention of yelloweye rockfish, catches of all other species will be estimated by standard creel surveys and counted against the appropriate state or federal harvest caps. Projected catches of these species are provided for reference (Table 1). Because yelloweye rockfish landed under this EFP would presumably have been encountered and released in the absence of the EFP, we estimate the EFP impacts to yelloweye rockfish as the additional mortality resulting from retaining (100% mortality rate) rather than releasing (64% mortality rate) the fish and use this as the overfished species bycatch cap.

Table 1. Estimated catch and increased mortality over status quo by species for 150 EFP trips.

Species	Est. catch (mt)	Est. increased mortality (mt)
Black rockfish	8.30	0.00
Blue rockfish	1.03	0.00
Cabezon	0.57	0.00
Canary rockfish	0.27	0.00
China rockfish	0.11	0.00
Copper rockfish	0.15	0.00
Kelp Greenling	0.13	0.00
Lingcod	3.45	0.00
Quillback rockfish	0.18	0.00
Vermilion rockfish	0.30	0.00
Widow rockfish	0.02	0.00
Yelloweye rockfish	**0.18**	**0.06**
Yellowtail rockfish	0.56	0.00

Duration, location, and gear

Duration

Due to lag-time experienced in the issuance of EFPs in 2010, ODFW requests this EFP be effective for one year from the date of issuance by NFMS. Sampling is most likely to occur from April 1 through September 30, as this time frame includes the vast majority of recreational fishing activity, and is commensurate with the implementation of the annual recreational groundfish fishery closure in waters deeper than 40 fathoms. If the approach is found to be successful for the purpose of informing assessments of the status of yelloweye rockfish, we would likely seek renewal until such time as retention is allowed in the fishery and catch-at-age data can be obtained through standard creel surveys.

Location

The EFP will take place in ocean waters off the coast of Oregon shoreward of the 40 fathom regulatory closure line.

Gear

No modification of fishing gear is contemplated under this EFP. Captains and crew will be instructed to use the same gear as they would for any other similar fishing trip.

Criteria for vessel selection

Vessels will be selected by applicants, focusing on vessels and captains with a history of cooperation with existing sampling programs, substantial historical participation in the sport groundfish fishery, and no groundfish prohibited species related violations within the past 5 years. Vessels will be selected to provide the greatest geographic coverage possible by selecting 2 or 3 vessels from each major recreational fishing port or port group on the Oregon coast. If more than the desired number of vessels from a single port qualifies under these criteria, applicants will use their personal knowledge of the fleet and operators to make vessel selections most likely to result in a successful project.

Monitoring
Vessels fishing under this EFP will be met at the point of landing by an ODFW sampler dedicated to this project. Vessels will notify the sampler of their estimated time and location of landing when they have yelloweye rockfish on-board, and the sampler will make every effort to arrive at that location prior to the vessel. Upon arrival of the vessel, all yelloweye rockfish will be immediately surrendered in a whole and intact condition to the sampler. In the event that the sampler cannot arrive at the point of landing prior to the vessel, the EFP will require that all yelloweye rockfish be held on-board the vessel until such time as the fish can be surrendered directly to appropriate ODFW or Oregon State Police (OSP) personnel. If yelloweye rockfish are removed from an EFP vessel without ODFW or OSP personnel present, the responsible party will be considered in violation of the EFP and subject to all applicable laws governing prohibited species catches. Catch of all other species will be accounted for under ODFW's standard catch accounting programs.

Data collection and analysis
Biological data such as length, weight, age, sex, and maturity status will be collected by the dedicated ODFW sampler after transporting specimens to the Newport lab. For each retained yelloweye rockfish, captains of participating vessels will provide a unique mark and record the depth and area of capture. Initial data analysis will be conducted by applicants and will consist of point estimates with 95% CI of the proportion of recreational catch in each age class using an area and/or depth weighted approach, and an assessment of how well the selected vessels represent the spatial and temporal characteristics of the recreational fleet as a whole. Final analysis and evaluation of the project will occur in the context of the next yelloweye rockfish stock assessment and should include participation and feedback from the stock assessment team. The project will be considered successful if the stock assessment team finds the data useful in their analysis of stock status.

Report preparation
An initial report authored by the applicants will be drafted following the completion of sampling during the 2011 fishing season. This report will focus on the success of the EFP in meeting the goal of collecting biological samples from 100 yelloweye rockfish from Oregon's sport groundfish fishery, and provide summary statistics including sample sizes for all data types, age and size distribution of the sample, and estimated age and size distribution of yelloweye rockfish encountered in the sport groundfish fishery. We expect the initial report could be completed by the June, 2012 Council meeting. A secondary reporting mechanism will be the first yelloweye stock assessment following the EFP, in which we expect the utility of this data for assessing stock status to be reported.

Signatures

Troy Buell

Morro Bay/Port San Luis Exempted Fishing Permit
Progress Report for the Pacific Fishery Management Council

October 15, 2010

prepared by Michael Bell, and Steve Rienecke, The Nature Conservancy
and Dwayne Oberhoff, Lisa Wise Consulting

1. Introduction - The Morro Bay/Port San Luis Exempted Fishing Permit (EFP) is testing how establishing a cooperatively managed, community fishing association (CFA) that employs commercial trawl permits to use fixed-gear such as longline, trap, pot, and hook-and-line gear off the Central California coast, under shared aggregate catch limits for target and bycatch species, can provide economic, social and environmental benefits. More detailed information on the purposes and goals of this project can be found in the 2010 EFP application, which was submitted for the November 2009 PFMC briefing book.

Between April 7 and September 30, 2010, 110 fishing trips have taken place under this EFP. It is expected that fishing under the EFP will continue until the end of December 2010. In addition to landings under the EFP, overall landings in 2009 for Morro Bay and Port San Luis have increased approximately 220% from their all-time lows in 2007. An additional offloading facility has become available in Morro Bay and the new baiting business formed in 2009 continues to operate and serve local and visiting fishermen. In addition to these developments, several other major tasks have been completed:

- An EFP fishermen selection process was revised and again successfully implemented in 2010;
- EFP data collection protocols were revised from 2009 based on feedback from fishermen and is consistently reducing data management costs;
- Use of the online database, “eCatch”, continued and is being updated to increase functionality and performance for fishermen and project managers; and,
- The harvest plan was periodically revised in 2010 with input from EFP fishermen, and regular meetings to update the fishermen on project progress and accomplishments.

Implementation of the EFP is overseen by the Community Based Fishing Association (CBFA), which is comprised of representatives of the partners on the EFP proposal. The CBFA oversees all aspects of EFP implementation. The CBFA has met approximately every two months to review progress and, offer recommendations and advice for the direction of the project. Development of the harvest plan has been led by a team that includes the CBFA, participating fishermen and project managers.

2. Harvest Planning Challenge - The goals for the harvest plan are to:

- Maximize learning of the feasibility and cost effectiveness of harvesting traditionally trawl caught species with alternative fishing gears and techniques;
- Minimize catch of depleted species and overall bycatch rates; and,

- Build foundation for local multi-species fixed gear groundfish fishery.

The primary harvest planning challenge for fishing under the EFP is to access the diversity of species that are traditionally landed by trawling using fixed gear instead. Not all trawl-caught species can be caught using fixed gear, particularly many desirable flatfish species. However, if this community (or any other) is to convert a portion of its traditional trawl capacity to fixed gear fishing, it will be important to develop the knowledge to target the diversity of species typically caught using trawl gear. This knowledge will be particularly important for operating under low limits for depleted species, increasing the value of certain target species and remaining flexible with stock assessment results and designating species overfished.

The constraints of the harvest plan include sharing low aggregate catch limits for depleted species shared among six fishermen, the need to provide a viable fishing opportunity for fishermen who make the business decision to participate in the EFP versus open access, and the need to share a fewer number of observers compared to fishermen. Further, all fishing activity in 2010 has taken place in waters deeper than 170 fathoms as an additional measure to avoid depleted species (the EFP stipulates that fishing must occur in waters deeper than 150 fathoms).

The harvest plan was developed by the participating fishermen and members of the CBFA and then approved by the CBFA. The harvest plan is intended to be managed adaptively as circumstances dictate. Management and pacing of sablefish landings has been an important consideration in the EFP harvest plan not only because they are abundant and caught in high numbers even when targeting other EFP target species, but also because they are among the most economically desirable species for fixed gear operations.

In the first iteration of the harvest plan, EFP project managers decided to establish six positions (six permits available) in the EFP and partition the sablefish aggregate catch limit (300 mt) into smaller individual allocations that were based on EFP fishermen participation duration and/or gear type. To further pace sablefish landings, each fisherman was allocated sablefish in 10,000 pound sub-allocations. Once a fisherman reached the 10,000-pound sablefish sub-allocation, an assessment of prior landings would determine the granting of another 10,000 pound sub-allocation. The aggregated catch limits for other target species (e.g. blackgill rockfish, shortspine thornyhead) was not divided amongst the six EFP fishermen, which allowed for fishermen interested in targeting these species to fish for them without the limits imposed by individual allocations.

The harvest plan also outlines the lease rate for the permit license agreement between TNC and participating fishermen. The license agreement requires compliance with all EFP terms and conditions. The lease rate can also help direct fishing efforts towards desirable and potentially underutilized target species. The lease rate outlined in the harvest plan was only levied on sablefish and shortspine thornyhead. All revenue resulting from lease agreements are allocated to the cover the cost of managing the EFP project.

Between October and the end of 2010, EFP fishermen and project managers will be exploring other harvest planning ideas to encourage more diverse catches. Diversifying catches is a long term process and will be a continuing area of focus for this project. The complete evolution of the harvest plan will be discussed in the final 2010 EFP report.

While efforts to better diversify catches clearly remains a work in progress, the collaborative and adaptive nature of the harvest planning process will be an important part of a successful CFA. The elements that have been found to be successful are as follows:

- Well defined roles and responsibilities. The harvest planning team is empowered to make decisions on the plan. Their efforts are guided by the goals and constraints of the EFP. While advice or approval may (and should) be sought from interested parties (CBFA, markets, other stakeholders), responsibility rests with the fishermen and project managers;
- A rapid turnaround of information to inform decision making and that all fishermen have equal access to information using the eCatch database (refer to Section 3.1); and,
- Planning team members meet on a weekly basis, with few exceptions, which has helped build commitment to the process and provides an opportunity to air and resolve problems quickly.

2.1. Budgeting the Aggregate Catch Limit Across Different Operations – When the trawl sector of the groundfish fishery transitions to an individual transferable quota (ITQ) management structure, a significant change expected will be the incorporation of some trawl effort into this nascent CFA. Concurrent with this EFP, TNC is working with other central coast fishermen to deploy trawl permits on trawling vessels that are subject to gear and area restrictions, and scientific research is underway to more clearly understand the economics and environmental effects of these operations. Significant effort is also being given to measuring the economic costs and benefits of these arrangements. While the downsides to trawling include that it is non-selective, more difficult to avoid depleted species than fixed gear, and contributes to greater habitat impacts, the advantages include increased diversity and volume and the market demand for trawl-caught fish. A future goal of this effort is to mitigate the downsides and accentuate the advantages of incorporating trawling into a diversified CFA portfolio.

A fishery that relies entirely on a single species or a single gear type jeopardizes community stability by harvesting that single species at a rate higher than the resource and/or market can withstand. A more resilient fishing model shows more diversity in species and gear type and is able to respond and recover quickly from shocks; much like a well-managed stock portfolio.

A challenge for the CFA in the future will be to “budget” its available quota shares across different operations in a way such that it encourages diversity, optimizes landings values, while observing constraints. Transitioning a portion of historic trawl effort to more selective gear could minimize the risk of catching depleted species, reduce habitat impacts by using less destructive gear, keep some portion of trawl vessels operational while using the remainder for several fixed gear operations working throughout the year, and could diversify landings for both processors, the consumer and local restaurants. Another option that could provide better returns would be to target flatfish species with trawl or Scottish seine gear, and increase the proportion of quota pounds available to fixed gear operations for sablefish or rockfish which typically receive a higher ex-vessel price for their catches while reserving the quantity of petrale sole for a smaller number of trawl operations.

Cooperation among participating fishermen will be key to meeting these complex challenges. The tools and techniques, most of which are not new, used in this EFP will be effective as future efforts seek to broaden the CFA to include trawl effort. An area of exploration for the remainder of 2010 and beyond will be to how to further define and resolve the quota budgeting challenge for a successful CFA.

3. Monitoring the Exempted Fishing Permit – The goals for monitoring the EFP are:

- Ensure all fishing is conducted in compliance with EFP Terms and Conditions including catch of targeted and depleted species, location of fishing and landings, fishing gear , retention/discard requirements, participation, observer coverage, and trip limits;
- Complying with monitoring and reporting requirements, including at-sea observers, bi-weekly landings reports, vessel monitoring systems, and preliminary and final reporting requirements;
- Provide full catch accounting for fishing activity under the EFP;
- Find ways to make monitoring efficient and less costly; and,
- Provide for fishery data and reports to be available to managers and fishermen to inform harvest and fishing trip planning.

In the EFP, each fishing trip is monitored by a human observer and fishermen must retain all rockfish, regardless of condition (marketable or not). For this EFP, fishermen complete a project-specific logbook and record the port/harbor departure date, time, and set date, time, location, and composition of catches (retained and discards). In addition, fishermen have been asked by project managers to record the costs associated with each trip such as fuel, ice, bait, baiting services, groceries and crew share. Observers provide bycatch and discard information and assist in documenting total catches associated with EFP fishing. These data are entered into a database, known as “eCatch”, along with data from other fishing projects (including a restricted trawl operation in Morro Bay and a Scottish seine operation in Half Moon Bay) and are used to monitor the fishery, prepare catch reports for NMFS, and provide data in a user-friendly form to fishermen.

3.1. eCatch - The CFA will require economically efficient collection of up-to-date and accurate information on the location, amount, and species of fish caught under the EFP and other arrangements and agreements. To address this need and to maintain data integrity and efficiency, an online database, known as “eCatch”, was developed and deployed a secure, password protection. This database provides a low cost method for project managers, staff and fishermen to monitor collective progress towards aggregate catch limits, assess revenue, and visualize the spatial behavior[1] of the fleet. The one-way flow of these fishery data from fishermen to fishery managers was viewed as a shortcoming and a missed opportunity in traditional monitoring. Other cooperative fishery efforts have relied upon selective data sharing among the cooperating fishermen to allow them to monitor their activities and make improvements.

eCatch is a powerful tool for adaptive and spatial management. EFP fishermen have access to the online eCatch database and can utilize the database to access trip data and utilize these data to plan upcoming fishing trips, view maps of their recent trips, assess the EFP fishing grounds to identify those areas with the greatest potential for target species and to identify and avoid areas in which depleted species are likely to be caught. Feedback has been solicited from the fishermen on ways to increase the functionality of the database. Many of the recommendations revolve around increasing the information seen by each fisherman for their respective trip and set (i.e. time of day, geographic coordinates, number of fish per set, and tide and moon phase) that is visible in the map interface of the database. During the 2010 EFP, a recommendation from the EFP fishermen was to make target species landing data available only to project managers and the respective EFP fisherman that conducted the trip while maintaining the sharing of depleted species catches with all EFP fishermen. The fishermen’s rationale for this change was to reduce competition for fishing locations and to provide a stimulus for geographic experimentation. The overall consensus is that eCatch may be able to assist the fishermen fish more efficiently and reduce bycatch rates of non-target and depleted species.

eCatch also includes a number of standard queries, including one that allows project managers to produce a report on catches that is accurate within 48 hours (the timeframe within which fishermen must submit trip data to project managers) and data is reviewed for quality every two weeks (the timeframe for required reports to NMFS). Project managers are interested in developing on-board, real-time data collection strategies, such as electronic logbooks that may be able to upload data to eCatch in near real-time fashion.

[1] Spatial information from EFP fishermen is from latitude/longitude for each set reported in trip logbooks. For trawl operations, a subscription for Vessel Monitoring System data was purchased.

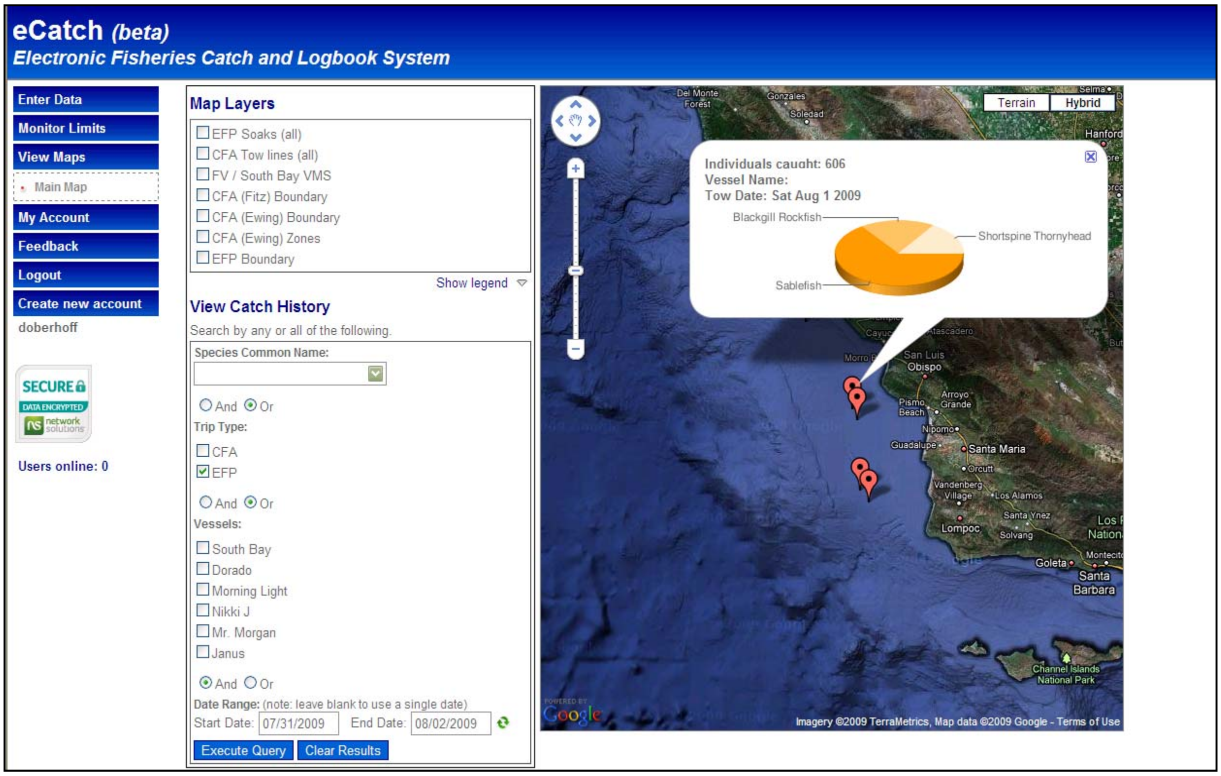


Figure 1 - Screenshot of eCatch database interactive mapping tool showing set locations. Note that each set has an associated pop-up that will show the date, name of vessel, quantity of fish caught per set, and catch composition. Data is available for EFP/Fixed gear operations, trawl and Scottish seine operations. (please note this example uses a fictionalized trip and set locations to protect confidential information of EFP fishermen.)

3.2. Observers – In the 2010 EFP, four observers are under contract by TNC with Pacific States Marine Fisheries Commission (PSMFC) to meet the EFP's 100% monitoring requirement. The EFP-dedicated observers cover all EFP fishing trips on a full-time basis and are following WCGOP observer protocols. The observers have also been tasked with completing an EFP project-specific trip summary form and a census of all retained rockfish for each fishing trip. Observer coverage is costly and fishing trip revenues are not sufficient to cover these costs. Maximizing the use of observers (smaller number of observers than fishing operations) and having the flexibility to research less costly monitoring schemes (i.e. electronic monitoring) is essential for smaller scale fishing operations.

In the 2010 EFP, four observers were shared among six fishing operations. If a future CFA is to facilitate sharing of observers as a means to reduce costs, a fair and transparent protocol must exist for assigning observers and a fisherman must accept the need to forego a trip if an observer is not available. In this EFP, the protocol used to assign an observer to a fishing vessel is part of the harvest plan and may be modified by the harvest planning team if necessary. From April 7 to June 30, a priority ranking system was created based on the timing of the landings by the individual fishermen, i.e. the fisherman with the most recent landing will receive the lowest priority rank and thereby move other fishermen up in priority. All requests for an observer had to be made with at least 24 hours notice. Any requests for an observer by a fisherman with a lower rank defers to the highest ranked fisherman first. If the highest ranking fisherman chooses not to exercise his right to the available observer, the observer will be offered to the fisherman in the second position and so forth. A fisherman ranked higher than the requesting fisherman may choose to exercise their rank and utilize the available observer, thereby "bumping" a lower ranked request but subsequently sending himself to the lowest rank. If no higher priority fishermen utilize the available observer, the observer will be assigned to the lower priority rank individual who initially made the request.

On July 1 the observer sharing protocol in the harvest plan was changed due to the inclusion of two additional fishermen (from four to six fishermen) and a request by returning EFP fishermen that foresaw a need to revise the protocol to maintain an equitable sharing system. The observer sharing protocol developed by the fishermen and accepted by the fishermen and project managers has been termed the "20 day/10 day Observer Sharing Protocol." This protocol designates four of the six fishermen as "primary" fishermen (since there are four observers) and two as "secondary" fishermen. The protocol assigns a specific observer to one of the four fishermen for a 20 day period. The two fishermen in the secondary position will not have a dedicated observer for a 10 day period, but observers not being utilized by the primary fishermen can be assigned to a secondary fisherman. The observer assignments become effective at 12:00 a.m. on the day that their respective period beings and expires at 11:59 p.m. on the last day of the period. Exceeding these timeframes would only be allowable if agreed upon by the primary fisherman and the secondary fisherman. All requests for an observer were to be made by each fisherman and directly to each observer with 24 or more hours notice, which has reduced project management time and costs.

Partners in this project have identified the cost of human monitoring under the ITQ fishery to be a major impediment to developing a successful CFA. The costs of 100% observer coverage to individual fishermen, particularly those fishing fixed gear under trawl quota, would be too great for most small scale fishing operations.

In 2008, NOAA worked with TNC and the EFP fishermen to test the feasibility of a video-based electronic monitoring (EM) system on vessels using fixed gear in the EFP. While results from the 2008 study showed positive results, a short fishing season and lack of funding from NOAA to continue the research resulted in little new available data to guide the further development of EM for the larger fishery. Also, one potential bias was identified in that fishermen were relying on observers to share information. To resolve this issue, observers were instructed not to share their estimates with fishermen in 2009 and 2010. Additionally, improvements were made to the EFP logbooks to make them more comparable with EM technology. An EM system has the potential to be cost effective only if an audit system can successfully be developed. Future development of EM systems will require precise recordkeeping by individual fishermen, maintaining accurate logbooks and reporting technical issues to EM technical support staff in a timely manner. These steps will be critical towards developing an audit system in which the video reviewer will only have to review a portion of the data to make it cost effective. TNC funded another electronic monitoring project for 2010 on all vessels fishing under the EFP. An interim and final report will be submitted to the Pacific Fishery Management Council that documents the results of the 2010 electronic monitoring project.

4. Jobs and Economic Effect of the Project – Local shoreside businesses have continued to invest in expanding their capacity as a result of increased harvest activity in the area, and the baiting business established in 2009 continues to grow and has been able to employ up to 12 people during the busy times of the year. Further, TNC and other partners have been working with local fishermen in cooperative research efforts, contributing to local employment in the fishery. Estimates of economic activity related to the EFP and other efforts will be updated in the final EFP report due to PFMC in 2011.

5. Fishermen Selection – In order to make the selection process as open and transparent as possible, project managers announced the details of the EFP opportunity in the newsletters to the Port San Luis Commercial Fisherman's Association and Morro Bay Commercial Fishermen's Organization and held a public meeting in both Port San Luis and Morro Bay to answer questions, distribute applications, and other pertinent material, and gain support for the project. Any commercial fisherman interested, eligible, and willing to abide by the rules of the EFP was invited to submit an application.

Ten fishermen applied to participate in the 2010 EFP. An independent, three member selection panel composed of community leaders, was convened to review the applications and make recommendations to TNC. TNC interviewed the top candidates and made the final decision to invite six fishermen to participate. All fishermen were identified to NMFS for confidential review by the Office of Law Enforcement (OLE). OLE provided no information to TNC, only verified for NMFS prior to issuance of the EFP that the applicants had no violations that would preclude their participation in the project.

6. EFP Landings Report – From April 7 to September 30, 2010, (the latest biweekly catch report to NMFS), target and depleted species landings under the EFP are as follows:

2010 EFP Rockfish and Non-Rockfish Landings

Target Species	EFP Landings and Observer Data (mt)	Amount Remaining (mt)	Aggregate Catch Limit for EFP (mt)
Sablefish	181.08	118.92	300.00
Southern Slope Rockfish (incl. blackgill and darkblotched)	7.78	52.22	60.00
Blackgill Rockfish	7.70	32.30	40.00
Longspine thornyhead	0.43	29.57	30.00
Shortspine thornyhead	10.63	49.37	60.00
Lingcod	0.00	15.00	15.00
Other fish:			
Chilipepper rockfish	0.00	20.00	20.00
Spiny dogfish	0.35	9.65	10.00
Splitnose Rockfish	0.01	0.99	1.00
Flatfish:			
Dover sole	0.38	9.62	10.00
Petrale sole	0.00	10.00	3.00
Other flatfish	0.00	10.00	10.00
Miscellaneous fish:			
Other skates	1.95	-	-
Pacific grenadiers	0.85	-	-
Unsp. Grenadiers	0.05	-	-
Albacore	0.04	-	-
Pacific pomfret	0.001	-	-
Unsp. octopus	0.001	-	-
Unsp. mackerel	0.001	-	-
Southern Shelf Rockfish	<0.001	-	-
Pinkrose rockfish	<0.001	-	-
Rosethorn rockfish	<0.001	-	-

2010 EFP Depleted Species Landings			
Depleted Species	EFP Landings (pounds)	Amount Remaining (pounds)	Aggregate catch limit for EFP (pounds)
Canary Rockfish	0	50	50
Yelloweye Rockfish	0	150	150
Widow Rockfish	0	4,409	4,409
Darkblotched Rockfish	0	1,000	2,204
Pacific Ocean Perch	0	300	300
Cowcod	0	440	440
Bocaccio	0	11,023	11,023

For more information on this Exempted Fishing Permit, please contact Michael Bell (805-441-1460 or mbell@tnc.org).

Morro Bay/Port San Luis Exempted Fishing Permit Electronic Monitoring Pilot Project

Progress Report for the Pacific Fisheries Management Council

October 15, 2010

prepared by Steve Rienecke and Michael Bell, The Nature Conservancy,
and Maria-Jose Pria, Jason Bryan, and Howard McElderry, Archipelago Marine Research Ltd.

1. Introduction – This pilot Electronic Monitoring (EM) project is utilizing the technology of an EM-based video monitoring system onboard commercial fishing vessels that records video and sensor data and is testing both the components of this EM-based system and compliance from captain logbooks for accuracy in reporting of fishing activities and overall catch accountability. The goals of this pilot project are to determine if this EM technology can accurately capture and record fishing activity and examine whether or not captains can maintain accurate logbooks to increase individual compliance. These two data components will then be compared to human observer data collected using WCGOP protocols to verify the level of accuracy and a final report will be given at the April 2011 PFMC meeting.

Between April 6 and September 30, 2010, 110 fishing trips have taken place under the EFP. The EM pilot project commenced after July 1, 2010, and EM systems were installed aboard 6 commercial fishing vessels shortly thereafter. In addition to implementing this pilot project for the EFP in July 2010, locally based field services were established to help assist with technical support and aide in reviewing video data which resulted in work for six local staff, of which two were newly established positions as a result of this project. This new development serves as an indication that locally based field and technical services can be developed to help support the development of this technology and project and serve to be a cost effective means to reduce the overall costs for running this project.

1.1. Project Context of TNC EFP – The Nature Conservancy (TNC) received an Exempted Fishing Permit (EFP) from the National Marine Fisheries Service (NMFS) that provides the authority and exemptions from the regulations governing federal limited entry trawl permits (LEPs) under which this project operates. Specifically, this EFP is testing whether establishing a cooperatively managed, Community Fishing Association (CFA) that employs commercial trawl permits to use longline, trap, pot, and hook-and-line gear off the central California coast, under shared aggregate catch limits for target and bycatch species, can provide several important economic, social and environmental performance benefits.

TNC has formed partnerships with individual fishermen, fishing organizations, fishing communities, conservation organizations, and governmental agencies. The 2010 EFP project is the third consecutive year this project, which has licensed or leased six TNC-owned federal limited entry trawl permits (LEPs) to up to six local fishermen who have agreed to utilize the fishing privileges under a community based fishing association (CBFA) that are subject to several constraints.

1.2. Background Information of IFQ for Trawl Sector – Many fishing port communities along the US Pacific West Coast have experienced a dramatic reduction in landings and an erosion of fishery infrastructure (processors, buyers, related services, boats, physical infrastructure, etc.) throughout the 1990s and 2000s as a result of increasing fishery regulations and stricter catch limits aimed at rebuilding overfished species populations. The migration and reduction of fishery infrastructure for port communities in central California coupled with increasing restraints from fishery regulations led to the decline of the economic viability of the traditional bottom trawling sector for this region. As a result the west coast trawl sector began to see consolidation due to participants either moving their operations to regions with better infrastructure, lower associated business costs, or participants who decided to sell their permits during the federally supported industry buy-out program.

The Pacific Fishery Management Council (PFMC) is currently in the process of transitioning the trawl sector of the groundfish fishery to an Individual Transferable Quota (ITQ) management system in response to many of the challenges and obstacles that this sector of the fishery has faced over the past two decades. From a large scale perspective, the ITQ has been designed to provide solutions to address many of the interrelated economic and environmental problems that have been plaguing this fishery. Although several components of this ITQ system have been designed to offer solutions for many of the larger scale coast-wide problems, concerns have been expressed by representatives from smaller scale fishing communities that an ITQ structure could potentially cause declines for these regions by displacing small-scale harvesting operations, disrupt coastal processing, escalate entry costs, and lessen fishing activity in ports that were historically reliant on the groundfish fishery. Chief among these is the expected cost of 100% human observer coverage and the potential impacts of that cost on small scale operations and gear switched vessels in particular…

1.3 Reason to Conduct a Pilot EM Project – As part of the terms and conditions of the EFP, and with the transition to an IFQ fishery, all fishing trips must carry a human observer onboard to record fishing catch and effort information. TNC has funded observers for this EFP since 2008. Upon implementation of the IFQ, which is slated for January 1, 2011, NMFS has set aside appropriation funds to cover 90% of the costs for observer coverage during the first year of transition. In year 2, the subsidy is expected to drop to 50% and in year 3 it is expected to drop to 25%, after which monitoring costs will be shifted entirely to the industry.

The National Marine Fisheries Service (NMFS) and Archipelago Marine Research Ltd. ("Archipelago") carried out a pilot study in 2008 testing a technology based monitoring option for this fishery using video based electronic monitoring (EM). The study results showed a lot of promise and TNC is continuing to test EM, with the aim of developing a lower cost alternative to 100% human-based observer monitoring to ease the financial burden on the fishing industry. In order to accomplish this goal it will require extensive testing of various components of the EM system itself and ensuring that fishermen keep accurate logbooks and communicate properly with EM technical support staff to report problems in a timely and efficient manner. Successful completion of these steps will be very critical towards developing an audit system in which video reviewers will only have to review a portion of the data to make EM cost effective.

Given the high costs associated with 100% human observer coverage and the potential of this cost to drive smaller scale fishing operations out of the fishery, it is crucial that the fishery explore the potential use of this or similar technologies to achieve catch accounting requirements and/or help supplement some level of observer coverage lower than 100% to make it more economically viable for smaller scale fisheries to continue to operate. Similarly it is also important to have the components for any EM system have a high degree of accuracy for catch accountability and be applicable to develop an appropriate system that is relevant for any fishery. The ultimate responsibility will be required by fishermen in that they must keep accurate logbooks and report any technical issues that may arise in a timely fashion to make sure those EM systems are running smoothly and accurately recording fishing events.

1.4. Study Objectives – The overall goal of this EM pilot project is to test the feasibility of a video-based electronic monitoring system for vessels that are fishing with fixed gear in the EFP. Specific objectives of the project are as follows:

- Expand on the scope of the original study that was conducted in 2008 to include a longer time frame of 6 months with more vessels involved;
- Expand on earlier 2008 comparisons between EM and observer monitoring results with more data, broader species coverage, and a specific focus on horizontal longline and pot gear;
- Work to develop an audit process comparing fishermen logbooks and EM data to provide timely, accurate, in-season catch data; and,
- Develop locally based project support to assist in field and data analysis services.

In addition to these overall goals it is important to highlight the core EM components that this pilot project is testing, which include things that would be relevant to the development of any future EM program for this fishery. These components include:

- Captain compliance with EM protocols (maintaining accurate logbooks, reporting technical issues to EM support staff in a timely manner, complying with full retention of rockfish and other overfished species, etc.);
- Cameras ability to determine species to the lowest possible taxonomic level; and,
- Timely data collection from vessels and monthly downloading of EM data by support staff.

This pilot project is testing these key functions of the EM system for this fishery which will result in data and information that can be instrumental for future efforts to develop an EM system.

2. Project Methodology – The electronic monitoring (EM) systems being used in this study consist of a control box, a suite of sensors that may include a GPS, hydraulic pressure transducer and winch rotation sensor and up to four waterproof dome style closed circuit television (CCTV) cameras (Figure 1). The control boxes are configured to continuously record sensor data, monitor performance and control imagery recording according to programmed specifications, as well as provide continuous feedback on system operations through a user interface. The sensors provide information about when and where fishing activity takes place and allows the cameras to start recording the catch handling activity taking place on deck.

Each EM system is capable of receiving video inputs from up to four CCTV cameras at selectable frame rates (i.e., images per second), ranging from 1 to 30 fps (motion picture quality). Using a frame rate of 5 fps the data storage requirement is approximately 60–100 MB per camera per hour, equating to a system capacity of around 80 days of continuous recording when using three cameras and a 500 GB hard drive.

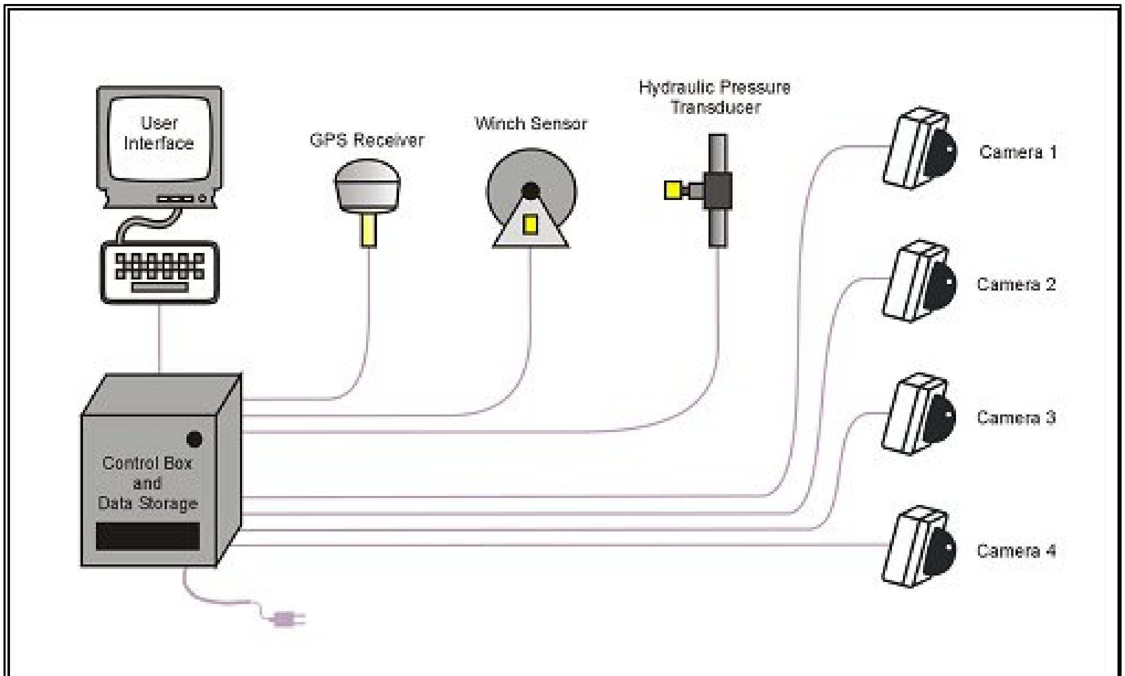


Figure 1. Schematic diagram of the electronic monitoring system, which can record video data from up to four cameras per vessel.

2.1. Field Operations -Six boats are involved in this study: four longline boats and two pot trap boats. Having EM systems installed allows captains the opportunity to go fishing when it is convenient for them and not have to be dependent on the scheduling of others. For easier comparisons between EM and fishing log data, participating captains have agreed to use slightly modified fishing logs to record catch information. The data collection component of the study began in the mid July 2010 and is scheduled to continue through the end of December 2010. An Archipelago senior EM technician installed the EM systems on all six participating vessels and trained locally subcontracted staff from Tenera Environmental Ltd. in San Luis Obispo, CA, to carry on EM service technician duties throughout the remainder of the project. The EM service technician's responsibilities include data retrieval every month, archiving and shipping of all EM data and troubleshooting EM systems at the dock. EM service technicians are on call to attend service events and contact senior staff at Archipelago if any system problems arose.

Service events so far have been limited to a camera failure and power supply issues. On one of the longline boats, two cameras had been mounted on a swing arm mount to properly view the fish as they passed the roller. When the swing arm was folded in one direction, it rubbed against the roof of the wheelhouse and compromised the seal on the camera. This was noticed and fixed at the next download and the second camera on the mount was fortunately in a good enough position to gather the needed data on fishing operations. On a different longline boat, there were problems initially with fluctuations in the power supply. As this was an older boat, the technicians and the boat captain worked together to upgrade some of the wiring and the system performed normally afterwards. Strengthening feedback to captains on data quality is an important part of the process.

3. EM Data Interpretation and Analysis – Staff at Tenera Environmental Ltd. and Archipelago Marine Research Ltd. both interpreted the sensor and video data gathered during this project. Data interpretation protocols were designed and communicated to the data technicians involved in the study before any of the data were processed and were based on the study's objectives, project methodology talks during the project planning stage, and experience accumulated from similar studies carried out in the past. The data technicians involved in data interpretation were also asked to record relevant feedback into a database to aid in data analysis.

EM sensor data interpretation is being facilitated using EM Interpret, proprietary software created by Archipelago for this purpose. Vessel speed and hydraulic pressure often correlate uniquely for various activities such as transit, setting, and hauling. The spatial plot provided a perspective on the various activities in relation to one another and was useful to help associate specific setting and hauling events. Setting and hauling events were matched to each other by interpreting physical proximity and timing. When displayed in this manner, the analyst reviewed the trip, interpreted vessel activity, and made annotations in the sensor record for haul and setting events. Haul start and end times from sensor data interpretation provided an initial reference for accessing image data.

3.1. Data Presently Collected - Data for the first month of the project includes more than one trip for every boat in the study. Most trips are very complete except for a large gap in Trip 2 for the Dorado (due to the camera failure) and the Janus which had lots of gaps on the first 4 trips (due to the power supply problems) but in both cases the EM systems have been restored to fully operational status. Sensor data collection has been robust on all the participating boats since we have not seen issues with GPS, drum, or pressure sensors that have resulted in difficulties interpreting fishing activity.

Table 1. Data collected during the first month (July) of the study.

Vessel Name	Vessel ID	Gear type	Trips	Hauls	Comments
Dorado	Vessel A	Longline	5	11	
Janus	Vessel B	Longline	5	4	Only 3 trips have fishing data. 2 of the 4 hauls incomplete
Morning Light	Vessel C	Longline	2	11	
Nikki J	Vessel D	Longline	4	10	
Moriah Lee	Vessel E	Trap	4	3	
Salmon Stalker	Vessel F	Trap	2	28	

4. Accomplishments to Date – Data have been downloaded from each of the vessels on a monthly basis, resulting in a total of three complete cycles of data that have been collected through the end of September. One of these cycles has been completely analyzed and staff is currently working on the second cycle. The cameras on board the vessels have been functioning properly and are able to identify and count fish from each of the fishing events. Video reviewers have been able to identify fish species to the lowest possible taxonomic level where footage allowed.

In addition to the amount of data collected for the project to date thus far, locally based field services were established to help assist in data collection and analysis efforts and build local infrastructure to help support the development of this project. Archipelago subcontracted with Tenera Environmental Inc., based in San Luis Obispo, to provide locally based field services for this pilot project. The reasons for establishing locally-based services, include the following: improving the timeliness of response, improving the overall quality of EM data collection, reducing overall project costs (as opposed to remotely based services), and establishing a local skill base that may help support future monitoring needs for this fishery. Training was lead by Archipelago staff and this resulted in the creation of work for six local positions at Tenera: two part time field technicians and four video reviewers (of the four video reviews, two were part time and two were newly hired full time positions).

5. Next Steps – Data will be collected for the remainder of this study until the end of December. During this time EM systems will be capturing all fishing activity and recording video and sensor data from these fishing events. This information will continue to be collected from each of the vessels on monthly intervals to ensure that operations run efficiently and to identify and solve any problems that may arise in a timely fashion. The data will be compiled and analyzed by Archipelago for a final report to the council for the April 2011 council meeting that will report on results from:

- Comprehensive comparison of fish counts for retained and discarded fish from all 3 data sets: observer, EM systems, and fishermen logbooks;
- Assessment of functionality of EM systems as a method of catch accountability;
- Performance of EM systems tested in this fishery;
- Assessment of locally based EM support technicians;
- Assessment of captain compliance in maintaining accurate logbooks for catch accountability measures and in reporting any technical issues to EM support staff in a timely and efficient manner;
- Developing methods and ways to allow for more timely in season comparisons that can be useful to both project managers and participating fishermen; and,
- Recommendations and next steps needed to continue further development of EM technology for this fishery.

6. Issues and Challenges – Due to the great uncertainty surrounding the financial viability of a small groundfish fleet paying for 100% human observer coverage, the EFP project proponents believe it is important to invest in and test alternative monitoring methods. A combination of improvements made to the EFP logbooks in 2009 coupled with not having observers share their information with fishermen created an appropriate setting in which to conduct this pilot project and continue to experiment and test whether EM is a feasible alternative to 100% human observers, or if it could help supplement some level of lower observer coverage.

The development of this pilot project will provide initial information on alternative EM methods for monitoring those trawl vessels who elect to utilize fixed gear through the gear switching components of the catch share program. Another important function of the pilot program has been to identify additional issues and challenges that need to be addressed in order to continue considering further development of this technology for this fishery. Some of the issues that have been identified thus far include:

- Improving the compliance and communication between fishermen and EM technical support to ensure smooth efficient operations;
- Have the components of any EM system be applicable to any fishery and have the ability to adapt to the ever changing needs and requirements for those fisheries;
- The importance of developing an audit based approach verification for vessel data to audit self reported fishermen logbooks and make EM cost effective;
- The importance of testing EM systems without onboard observers present to eliminate any potential bias by either the fishermen or observers- initially this could be done on low risk blackcod or thornyhead trips where these species are easily censured by EM and bycatch of sensitive rockfish species is negligible;
- Consensus among the proponents of any EM system have a clear target that is geared towards the monitoring needs for a particular fishery;

- Establish better communication lines and clearer communication between and among industry, regulatory agencies (NMFS, PFMC, CDFG, etc.), and non-profit organizations to secure the development of this technology for catch accountability and monitoring purposes; and,
- Encourage discussions with NMFS on parts of this fishery where observer coverage could be reduced and supplemented with EM technology.

Meeting these and other challenges will be necessary in order to fully develop and test EM technology's ability to provide a cost effective and reliable alternative to 100% human observers for vessels operating under the trawl IQ program. The development, assessment and potential application of EM technology for this fishery will require the full commitment and engagement of industry, managers and other partners. We look forward to continuing to provide the Council and others with the results of this pilot project as well as participating in the next phase of EM development and testing. We believe that working to develop and utilize technology to provide reliable catch accounting while reducing costs has significant potential to help maintain the diversity of the fleet and fishing communities under catch share management.

For more information on implementation of this pilot Electronic Monitoring project or the Exempted Fishing Permit, please contact Steve Rienecke (805-771-9234, 805-602-6399, or srienecke@tnc.org) or Michael Bell (805-441-1460 or mbell@tnc.org) or any of the project partners listed on the 2010 EFP proposal.

GROUNDFISH ADVISORY SUBPANEL REPORT ON FINAL REVIEW OF EXEMPTED FISHING PERMITS (EFPs) FOR 2011

The Groundfish Advisory Subpanel (GAP) reviewed the exempted fishing permits (EFPs) information and reiterates our September statement regarding the Oregon Department of Fish and Wildlife (ODFW) EFP:

ODFW Yelloweye Rockfish in Sport Charter Fishery EFP
This EFP, in our opinion, needs no modifications. This is the only way to obtain any yelloweye information – information sorely needed for future analysis and stock assessments.

We understand this EFP has been pulled due to changes in yelloweye specifications for 2011 but would like to see this EFP resubmitted in the future. We recognize the data collected from this program is primarily nearshore data. Information collected by the Trawl Individual Quota Program will primarily be offshore data. A combination of both would provide more robust data.

Furthermore, the GAP wishes to remind the Council that a problem still exists with a current EFP. The Regulatory Flexibility Analysis (RFA) Oregon yellowtail EFP has had a cap imposed for the target species, yellowtail rockfish, due to necessary allocation requirements. This cap is of insufficient size (3.8 mt) to prosecute this EFP. The cap needs to be set at least 8 mt. Yellowtail rockfish continues to be an underutilized and abundant species. It is requested that the Council and/or NMFS pursue a process-compliant remedy to this oversight.

Regarding modification of the EFP process, the GAP again suggests the duration of any EFP be for one year from the date of permit issuance instead of issued for a calendar year. Applicants would then have the opportunity to make plans for fishing, get observers, and be able to fish year-round. For instance, one applicant received a permit with a duration from September to December – well past the prime season for fishing and obtaining qualified information.

As an alternative, the GAP suggests the Council consider beginning discussion on changes to EFP operating procedures so permits are in effect for two years and match the biennial harvest specification cycle. The two-meeting EFP process could be started in March and culminate with a final Council decision in June, at the same time the final specifications are made. There are several advantages to this:

- Annual staff workload would be reduced.
- Observers would be available after their March training sessions.
- Applicants could make plans for any fishing season.
- Specifications cycle and permits would be in sync.

PFMC
11/06/10

GROUNDFISH MANAGEMENT TEAM REPORT ON FINAL REVIEW OF EXEMPTED FISHING PERMITS (EFPs) FOR 2011

One Exempted Fishing Permit (EFP) application, the Oregon Department of Fish and Wildlife (ODFW) yelloweye EFP, was forwarded for further review at the September 2010 Council meeting and submitted for approval at this meeting. The EFP application was a re-submission from last year. The Recreational Fishing Alliance (RFA-OR) yellowtail EFP, which was issued in late August of 2010 and is valid through August of 2011, impacts are also considered.

The Groundfish Management Team (GMT) also reviewed the reports submitted by The Nature Conservancy (TNC; Agenda Item H.4.a. Attachments 2 and 3) on the Morro Bay/Port San Luis Exempted Fishing Permit and would like to thank TNC for the timely submission of these reports.

2010 Approved Proposal Resubmitted for 2011

Oregon Department of Fish and Wildlife (Agenda Item H.4.a, Attachment 1)
ODFW informed the GMT that they will be withdrawing this EFP application, due to the combination of uncertainty in a funding source for the dedicated sampler for this project and the delay in the 2011 harvest specifications rules and the need to start 2011 with a balance of 14 mt of yelloweye rockfish in the scorecard. While the GMT understands the limitations and complications for 2011, we would like to encourage this and other innovative projects aimed at gathering more information to inform the yelloweye rockfish stock assessment once these complications have been addressed and there is more certainty in what yelloweye catch may be available for EFPs.

Exempted Fishing Permits Approved for 2010 that Continue into 2011

Recreational Fishing Alliance, Oregon
The RFA Oregon EFP was approved by the Council in November 2009 (Agenda Item G.3.a, Attachment 3), and issued by NMFS in August 2010. The EFP is designed to test a modified terminal tackle when targeting yellowtail rockfish in areas seaward of the 40-fathom depth restriction in Oregon waters. Due to the timing of the permit issuance, all trips under this EFP, and associated impacts to target and incidental species, will occur in 2011. During the 2011 and 2012 biennial specifications process, in conjunction with Amendment 21, the Council set aside 2.0 mt of yellowtail rockfish annually for EFPs. At this level, yellowtail rockfish (the target species) will be the most limiting species to this project, preventing a full-season of trips and data collection. Project participants estimate a minimum of 6.0 mt is needed to fully prosecute this EFP.

The GMT recommends that the Council increase the "off the top" EFP deduction for yellowtail rockfish from 2 to 10 mt, by submitting public comment on the proposed rule for the 2011-2012 harvest specifications and management measures (75 FR67810). The GMT recommendation is higher than the applicant estimate in order to provide a buffer, so that the underutilized target species is not limiting the fishing activities that this EFP is meant to test.

In reviewing the proposed rule, the fishery harvest guideline would be 3,857 mt, reducing both the trawl and non-trawl allocations (Table 1). **The GMT notes that NMFS will also need to consider the reduction to the trawl allocation when implementing quota pounds for the start of 2011.**

Yellowtail rockfish is an underutilized species; total mortality over the last three years has been less than 20% of the optimal yield annually. The GMT believes this EFP can be accommodated without adversely impacting the trawl and non-trawl allocations. Under trawl rationalization, it is anticipated that the trawl fleet will have increased utilization of yellowtail rockfish; however the quota pounds of co-occurring overfished species (e.g. canary and widow) will likely prevent a full attainment of the trawl sector's yellowtail allocation. Further, the increased yellowtail set aside would not limit other fisheries within the non-trawl allocation because these sectors also have limited access to yellowtail stocks given the co-occurring overfished species and the current non-trawl rockfish conservation areas.

GMT Recommendation

1. **Increase the "off the top" EFP deduction for yellowtail rockfish from 2 mt to 10 mt by submitting public comment on the proposed 2011-2012 harvest specifications and management measures (75 FR67810).**

PFMC
11/06/10

Table 1. Yellowtail rockfish 2011 proposed rule allocations under Amendment 21 and the proposed change to the yellowtail rockfish EFP set aside. (changes are in bold)

2011 Proposed Rule Allocations Under Amendment 21.

Species/Species Group/Area	2011 ACL	Tribal	EFP	Research	Incidental OA	Fishery HG	Trawl A21%	Non-trawl A21%	Trawl A21 mt	At-sea whiting set asides	Non-Whiting A21 %	Whiting A21 %	Non-Whiting A21 mt	Whiting A21 mt	Non-trawl A21 mt
Yellowtail N. of 40°10' N lat.	4,364	490.0	2.0	4.0	3.0	3,865	88%	12%	3,401	300	The rest	300	2,801	300	464

Option 1. Increased Yellowtail EFP Set Aside for 2011 and Resulting Amendment 21 Allocations.

Species/Species Group/Area	2011 ACL	Tribal	EFP	Research	Incidental OA	Fishery HG	Trawl A21%	Non-trawl A21%	Trawl A21 mt	At-sea whiting set asides	Non-Whiting A21 %	Whiting A21 %	Non-Whiting A21 mt	Whiting A21 mt	Non-trawl A21 mt
Yellowtail N. of 40°10' N lat.	4,364	490.0	**10.0**	4.0	3.0	3,857	88%	12%	**3,394**	300	The rest	300	**2,794**	300	**463**

*The whiting/non-whiting allocations are only used for the initial allocation calculations.

IMPLEMENTATION UPDATE FOR AMENDMENT 20 (TRAWL RATIONALIZATION) AND AMENDMENT 21 (INTERSECTOR ALLOCATION) AS WELL AS SCOPING OF PRIORITIZED TRAILING AMENDMENTS

At its September 2010 meetingthe Council prioritized four main trailing action issues for immediate consideration:

- Supersedence of the limited entry-open access allocations from Amendment 6 (implemented in 1994) by the trawl non-trawl allocations from Amendment 21;
- cost recovery;
- quota share (QS) control rule safe harbor exceptions for community fishing associations (CFAs), bycatch risk pools, and loan collateral financing; and
- severability of the mothership catcher-vessel catch history/endorsements from permits.

In conjunction with the above issues, the Council may also consider specifying a pass through of the Adaptive Management Program quota pounds in the third year of the program (currently the pass through is scheduled only for years 1 and 2). A scoping information document on these issues was prepared and is provided as Agenda Item H.5.a, Attachment 1. At this meeting, the Council is scheduled to continue its scoping process on those four issues. Scoping involves identification of options and impacts that should be considered in the analysis supporting the Council decision process.

In support of the Council scoping process on trailing actions, hearings were held on the issue of CFAs in Eureka, California (October 25), Portland, Oregon (October 27), and Monterey, California (October 28). During the public hearing, comment was solicited on the control limit exception for CFAs as well as other CFA provisions that might be added to the trawl rationalization program. While comment was solicited on the broad topic of CFAs, the public was informed that the immediate priority for the Council is limited to the issue of whether or not CFAs should be provided a safe harbor exception to the control limits (along with subsidiary issues such as the size of the exception, criteria CFAs must meet for the exception, etc.). Summaries of the hearings are provided as Agenda Item H.5.a, Supplemental Attachment 2.

In September, the Council requested review of historic data on trawl bycatch of Pacific halibut in order to consider whether a change to the halibut bycatch allocation to the groundfish trawl fishery should become a priority for trailing action. These data are provided as Agenda Item H.5.a, Attachment 3. Washington Department of Fish and Wildlife has provided a report on this issue (Agenda Item H.5.c, WDFW Report).

In determining how to move forward, the Council may wish to consider an expected schedule for completion of action on these issues (Agenda Item H.5.a, Attachment 4). In that regard, as a process efficiency measure, the value of appointing a group on some of the topics selected for immediate priority might be considered. If the Council appoints a workgroup, it should consider both constituent membership and agency support. Workgroups are able to operate most effectively when agency expertise is available during the workgroup meetings. Presence of agency personnel at workgroup meetings may also benefit the decision process at Council meetings.

The catch share program fishery management plan amendments (Amendments 20 and 21) were approved in August and implementing regulations are in the process of being finalized. The public comment period on the trawl catch shares components rule closed September 30 and final NMFS decision on this rule is expected later this fall. The final rule on initial allocation was published on October 1, 2010. By the time of the November Council meeting, the deadline for entities to apply for an initial allocation of QS (November 1, 2010) will have passed and any entity not having met that deadline will not receive an initial allocation (there are no hardship or other exceptions to this deadline). NMFS will provide a status report on implementation under this agenda item (Agenda Item H.5.b).

Council Action:

1. **Provide guidance on moving forward on those issues that the Council has identified as an immediate priority for trailing action. Guidance should address:**
   a. **options to be developed for analysis,**
   b. **any particular impacts or information that should be prioritized in the analysis,**
   c. **the calendar for consideration of trailing actions and need for workgroups to support option development, and**
   d. **other guidance as appropriate.**
2. **Respond to implementation issues identified by NMFS, as appropriate.**

Reference Materials:

1. Agenda Item H.5.a, Attachment 1: Fall 2010 Scoping Information on Trailing Actions for the Groundfish Trawl Catch Share Program.
2. Agenda Item H.5.a, Supplemental Attachment 2: Community Fishing Association Hearing Summaries.
3. Agenda Item H.5.a, Attachment 3: Historic Data on Trawl Bycatch of Pacifica Halibut and Hindcast Allocations.
4. Agenda Item H.5.a, Attachment 4: Calandar for Trailing Actions on Trawl Catch Shares.
5. Agenda Item H.5.c, WDFW Report, Washington Department of Fish and Wildlife Report on the Calculation of Halibut Individual Bycatch Quota for the Trawl Rationalization Program.
6. Agenda Item I.5.d, Public Comment.

Agenda Order:

a. Agenda Item Overview **Jim Seger**
b. National Marine Fisheries Service Report on Implementation **Frank Lockhart**
c. Reports and Comments of Advisory Bodies and Management Entities
d. Public Comment
e. **Council Action**: Refine Trailing Amendments for Further Development and Respond to Implementation Issues as Needed

PFMC
08/19/10

Fall 2010 Scoping Information on Trailing Actions for the Groundfish Trawl Catch Share Program

Management under the groundfish trawl rationalization program is scheduled to start January 1, 2011. Details on the program are available on the Council web site. When the Council took final action on the program, it recognized that there would be a number of follow-on actions (trailing actions) that it would want to consider. The Council is now scoping trailing actions. To help members of the public focus their comments, this document provides background information on the trailing actions the Council has prioritized for immediate consideration.

At its September 2010 the Council prioritized four trailing action issues for immediate consideration. With respect to these four issues, at its November 2010 meeting, the Council will review public comment on options that should be considered and impacts that should be analyzed. At that time the Council is scheduled to provide guidance on option development and a timetable for consideration of each of these issues. The issues the Council identified for immediate consideration are

- resubmission of its recommendation that the Amendment 21 intersector allocation action replace the allocations created when the Council recommended the groundfish license limited entry system (Amendment 6, implemented in 1994);
- cost recovery (setting up a fee program to cover the costs of management, data collection and analysis, and enforcement activities);
- safe harbors for the quota share control rule (exceptions to the control rule for: community fishing associations [CFAs], bycatch risk pools, and quota used as collateral for financing); and
- severability of the mothership catcher-vessel catch history/endorsements from the permits.

In November 2010, the Council will also review historic data on trawl bycatch of Pacific halibut in order to consider whether a change to the halibut bycatch allocation to the groundfish trawl fishery should become a priority for trailing action. In conjunction with the above issues, the Council may also consider specifying a pass through of the Adaptive Management Program quota pounds in the third year of the program (currently the pass through is scheduled only for years 1 and 2). Other trailing actions may be considered in the future. Public comment on scoping for the above trailing actions should be submitted to the Council by the briefing book deadline for the November 2010 Council meeting. Information on the supplemental deadline (October 26) is available on the Council website.

Replacing Limited Entry/Open Access Allocations (Amendment 6) With Trawl/Nontrawl Allocations (Amendment 21)

Two amendments to the fishery management plan (FMP) have considered formal allocations - Amendments 6 and 21. Amendment 6, implemented in 1994, specified allocations of groundfish stocks to limited entry and open access sectors (Table 1). Amendment 21 allocations (Table 2) scheduled to be implemented in 2011, consider allocations to trawl sectors, with the balance of the harvestable surplus allocated to non-trawl sectors (i.e., limited entry fixed gear, directed open access, and recreational sectors combined). Under Amendment 21, the annual catch limits (ACLs) are reduced to account for mortality in exempted fishing permits (EFPs), tribal fisheries, incidental open access fisheries, and research activities. The resulting value is the Fishery Harvest Guideline, which is the value that is used in the allocations.

Additionally formal sector allocations exist for Pacific whiting and sablefish north of 36° N. latitude (Figure 1). While these allocations have been specified in Federal regulations for many years, they are now incorporated in the FMP under Amendment 21.

Amendment 6, which established the commercial non-treaty limited entry system, also established allocation procedures for any species to be newly allocated between commercial open access (including directed and incidental open access) and limited entry sectors based on catch history for the license limitation allocation period (July 11, 1984 through August 1, 1988). These allocations worked well at the time since the fishery was not all that structurally different in the 1990s than it was in the 1984-1988 historical catch period upon which the allocations were based. However, the fishery changed significantly after passage of the Sustainable Fisheries Act (SFA) of 1996, which amended the Magnuson-Stevens Act (MSA) with more stringent conservation mandates, and the subsequent implementation of Amendment 11 in 1998, which codified the SFA mandates and the new National Standard 1 (NS1) guidelines interpreting these mandates.

Table 1. Limited entry and open access allocations established by FMP Amendment 6.

Stock or Stock Complex	Limited Entry Share	Open Access Share
Lingcod	81%	19%
Minor Rockfish South (including Chilipepper Rockfish)	55.7%	44.3%
Minor Rockfish North (including Yellowtail Rockfish)	91.7%	8.3%
Shortspine Thornyhead (north of Conception Area)	99.73%	0.27%

A direct result of implementing the more stringent conservation mandates of Amendment 11 was the first declarations of stocks being overfished. This led to dramatically lower fishing limits, widespread fishing closures on the continental shelf (e.g., Rockfish Conservation Areas [RCAs] and Cowcod Conservation Areas [CCAs]), and a complete re-structuring of the fishery. From that time to present, Amendment 6 allocations have not been effectively attained nor were they even considered in deciding annual or biennial management measures. Beyond direct suspension of these allocations for overfished species, access to other healthy stocks in the Exclusive Economic Zone (EEZ) has been constrained by the need to significantly reduce fishing mortality on overfished species. When there is little chance of attaining a harvestable surplus of a stock, the established allocation has little significance in the management system. The limited entry and open access Amendment 6 allocations for bocaccio, canary, cowcod, and yelloweye are temporarily suspended since they are overfished. As such, the Council adopted two-year allocations for each biennial management cycle.

Amendment 21 allocations were borne of the necessity to allocate stocks that are predominantly or significantly caught in trawl fisheries to more effectively implement Amendment 20 trawl rationalization. The original Amendment 6 allocations for stocks that were subject to Amendment 21 allocations were superseded by the new Amendment 21 allocations. The Amendment 21 action also underscored the Amendment 6 policy to temporarily suspend any formal allocation for a stock that is declared overfished. The original FMP provision under Amendment 6 temporarily suspended any formal limited entry/open access allocation (i.e., Amendment 6 allocation) when a stock is declared overfished. Amendment 21 modified the provision to temporarily suspend <u>any formal allocation</u> for any stock declared overfished.

There are few, if any, stocks that are potentially subject to Amendment 6 allocation consideration in the 2011 and 2012 management cycle. Any significant harvestable surplus of shelf species that are not subject to Amendment 21 allocations, such as minor shelf rockfish, will not be accessible due to RCA restrictions. The allocation of minor nearshore rockfish species has been largely deferred to the states under the auspices of state fishing policies and/or state nearshore FMPs. The only other Amendment 6 species (i.e., lingcod, minor slope rockfish, and shortspine thornyhead north of Pt. Conception) are subject to Amendment 21 allocations.

Table 2. Amendment 21 allocations for 2011.

Species/Species Group/Area	2011 ACL	2011 ACT	Fishery HG b/	Trawl A21%	Non-trawl A21%	Trawl A21 mt	At-sea whiting set asides	Trawl after at-sea set asides	Non-Whiting	Whiting	Non-Whiting	Whiting	SS	CP	MS	Non-trawl A21 mt
									A21 %	A21 %	A21 mt	A21 mt				
Lingcod N of 42º N lat. (OR & WA)	2,330		2,059	45%	55%	927	6	921	99.7%	0.3%	918	3				1,132
Lingcod S of 42º N lat. (CA)	2,102		2,095	45%	55%	943	0	943	99.7%	0.3%	940	3				1,152
Pacific Cod	1,600		1,200	95%	5%	1,140	5	1,135	99.9%	0.1%	1,134	1				60
Sablefish S of 36º N lat.	1,298		1,264	42%	58%	531	0	531	100.0%		531	0				733
Dover sole	25,000		23,410	95%	5%	22,240	5	22,235	100.0%		22,235	0				1,171
English sole	19,761		19,661	95%	5%	18,678	5	18,673	99.9%	0.1%	18,654	19				983
PETRALE SOLE a/	976		911			876	5	871	100.0%		871	0				35
Arrowtooth flounder	15,174		13,096	95%	5%	12,441	10	12,431	100.0%		12,431	0				655
Starry Flounder	1,352		1,345	50%	50%	673	5	668	100.0%		668	0				673
Other flatfish	4,884		4,686	90%	10%	4,217	20	4,197	99.9%	0.1%	4,193	4				469
PACIFIC OCEAN PERCH	180	157	144	95%	5%	137	0	137	The rest	17% or 30 mt	107	30	13	10	7	7
WIDOW	600		539	91%	9%	491	0	491	The rest	52.0%	235	255	107	87	61	49
Chilipepper S of 40°10' N lat.	1,882		1,867	75%	25%	1,400	0	1,400	100.0%		1,400	0				467
Splitnose S of 40°10' N lat.	1,461		1,454	95%	5%	1,381	0	1,381	100.0%		1,381	0				73
Yellowtail N of 40°10' N lat.	4,364		3,865	88%	12%	3,401	300	3,101	The rest	300	2,801	300				464
Shortspine thornyhead N of 34 27' N lat.	1,573		1,528	95%	5%	1,452	20	1,432	99.9%	0.1%	1,430	1				76
Shortspine Thornyhead S of 34 27' N lat.	405		363	50 mt	The Rest	50	0	50	100.0%		50	0				313
Longspine thornyhead N of 34 27' N lat.	2,119		2,075	95%	5%	1,971	5	1,966	100.0%		1,966	0				104
DARKBLOTCHED	298		279	95%	5%	265	0	265	The rest	9% or 25 mt	240	25	11	9	6	14
Minor Slope Rockfish N of 40°10' N lat.	1,160		1,092	81%	19%	885	55	830	98.6%	1.4%	818	12				207
Minor Slope Rockfish S of 40°10' N lat.	626		599	63%	37%	377	0	377	100.0%		377	0				222

a/ Under the Final Preferred Alternative, the Council temporarily suspended the Amendment 21 allocation between trawl and non-trawl. The values in this table represent a two year allocation.

b/ The Fishery Harvest Guideline represent the amount of the ACL, after subtracting the off-the-top amounts that is available for allocations. Off-the-top amounts include total mortality estimates for scientific research, tribal fisheries, incidental open access and set asides for EFPs.

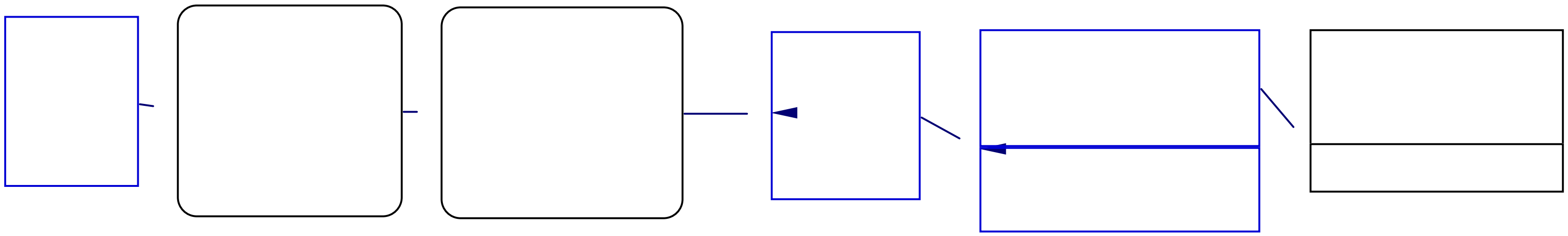


Figure 1. The formal allocation of sablefish north of 36° N. latitude.

Cost Recovery

The Council needs to further develop the methodology for identifying costs to be recovered through fees and specify a program of fees. The Section 303A(e) of the MSA states that:

> In establishing a limited access privilege program a Council shall -- (1) develop a methodology and the means to identify and assess the management, data collection and analysis, and enforcement programs that are directly related to and in support of the program; and (2) provide, under section 304(d)(2), for a program of fees paid by limited access privilege holders that will cover the costs of management, data collection and analysis, and enforcement activities.

The program adopted in Amendment 20 is now Appendix E of the groundfish FMP. Section A-2.3.3 of Appendix E states:

> Program costs
>
> a. Cost recovery. Fees up to three percent of exvessel value, consistent with MSA 303A(e) may be assessed. Cost recover shall be for costs of management, data collection, analysis, and enforcement activities.
>
> b. Fee structure. To be determined. The Trawl Individual Quota Committee (TIQC) recommended a fee structure that reflects usage. A fee structure that allows for equitable sharing of observer costs for smaller vessels may be developed.

Some of the issues which might be addressed in developing a methodology include treatment of cost savings that result from the trawl rationalization program, including existing funds that are reprogrammed to other uses as a result of the catch share program (e.g. if under the catch share program the National Marine Fisheries Service (NMFS) Limited Entry Office experiences some efficiencies in some areas that result in cost savings that are reprogrammed to activities which are not directly related to the trawl rationalization program, how is this taken into account in determining catch share program costs).

An uncertainty at this point is whether and, if so, how the fee structure might to take into account the situation of smaller vessels with respect to equitable sharing of costs (A-2.3.3.b).

Safe Harbors

The Council has attempted to establish very strict rules for the application of limits on quota share/quota pounds (QS/QP) control. At the same time, the Council has been concerned that these limits not prevent certain types of activities which it considers beneficial to the fishery. These activities might include the formation of CFAs, risk pools, and the financing of QS/QP purchases by financial institutions. It has been suggested that the Council establish very specific safe harbor exceptions to allow these types of beneficial activities.

> **Community Fishing Associations:** Prior to its final action on Amendment 20, the Council scoped possible provisions for CFAs. Entities are able to form community associations for a variety of purposes without Council action. For the Council, the main CFA issues are (1) what, if any, special privileges should be provided to CFAs, (2) what are the criteria such an entity would have to meet in order to qualify as one deserving of such privileges? To date, the main special privileges that have been noted as possibilities for CFAs are a safe harbor from control limits and a possible priority for receiving allocations of adaptive management program quota pounds. The Council prioritized for immediate consideration the provision of a control rule safe harbor exemption for CFAs. Potential provisions for CFAs that were presented to the Council at its September 2010 meeting are summarized in a section below. Potential CFA provisions identified in the spring of 2009 are provided as Appendix 2 to this document.
>
> **Risk Pools.** During the development of the program there has been much concern about how industry might organize itself to make best use of the limited amounts of overfished species QS/QP that may be available. One concept that received much attention was the possibility that fishermen might organize themselves into risk pools, with each member of the pool contributing toward the total amount of overfished species QS/QP in the pool. In a footnote to section A-2.2.3.e of Appendix E, the Council stated:
>
>> It is the Council intent that control limits should not constrain the formation of risk pools to help the fishermen deal with overfished species constraints, so long as the pools do not undermine the effectiveness of the accumulation limits. A risk pool is one in which two or more people enter into an agreement whereby if one person does not have the QP the others would agree to provide the QP, if they have them. Whether these kinds of agreements are informal or formal, as other considerations and conditions are added to the agreements they may begin to constitute control. It is the Council intent to allow for these pooling agreements, so long as they do not become control.
>
> Nevertheless, there is concern that QS/QP control rules could inhibit the formation of such pools either because of a clear conflict with the control rules or precaution due to uncertainty as to how the control rules might apply to risk pools. It has been proposed that provisions be added to create a clearly delineated safe harbor for those who may desire to form risk pools.

In public comment it has been proposed that there be no accumulation limit for risk pools established to manage risk of overfished species catch events (individuals participating in the risk pool would still be individually subject to the accumulation limit but the risk pool itself would not be subject to such limits). Those eligible to take part in agreement negotiations and become members of risk pools might be limited to QS holders and vessel owners (including processors that own vessels), or their representatives. Pooling agreements might cover multiple years and pool members might contract with agents to enforce the provisions of the pooling agreement or enforce such provisions themselves. Such agreements might not be allowed to dictate terms of catch delivery. Risk pool agreements might not automatically be provided to oversight agencies for approval but would be made available on request. Risk pools are also addressed below in comments on CFAs.

Financial Institutions. Concern was expressed that the control rules could inhibit financial institutions that might have an interest in QS/QP as loan collateral. NMFS modified the final initial allocation rule to at least partially address this issue. The following is an excerpt from the final initial allocation rule published in the *Federal Register* on October 1, 2010. Underlining has been added to highlight the additions made in the final rule to address the concern about the effect of the control rule on financial institutions. Public comment has suggested that: the exemption apply only if financing arrangements do not exert control over harvesting and delivering activity of loan recipients; and that lenders be prohibited from receiving QP, unless otherwise eligible.

(4) *Accumulation limits*—(i) *QS and IBQ control limits.* QS and IBQ control limits are accumulation limits and are the amount of QS and IBQ that a person, individually or collectively, may own or control. QS and IBQ control limits are expressed as a percentage of the Shorebased IFQ Program's allocation. (A) *Control limits for individual species.* No person may own or control, or have a controlling influence over, by any means whatsoever an amount of QS or IBQ for any individual species that exceeds the Shorebased IFQ Program accumulation limits. (B) *Control limit for aggregate . . .* (C) The Shorebased IFQ Program accumulation limits are as follows: [see Table 4 (ii) Ownership—individual and collective *rule.* The QS or IBQ that counts toward a person's accumulation limit will include: (A) The QS or IBQ owned by that person, and (B) That portion of the QS or IBQ owned by an entity in which that person has an economic or financial interest, where the person's share of interest in that entity will determine the portion of that entity's QS or IBQ that counts toward the person's limit.	(iii) *Control.* Control means, but is not limited to, the following: (A) The person has the right to direct, or does direct, in whole or in part, the business of the entity to which the QS or IBQ are registered; (B) The person has the right to limit the actions of or replace, or does limit the actions of or replace, the chief executive officer, a majority of the board of directors, any general partner, or any person serving in a management capacity of the entity to which the QS or IBQ are registered; (C) The person has the right to direct, or does direct, and/or the right to prevent or delay, or does prevent or delay, the transfer of QS or IBQ, or the resulting QP or IBQ pounds; (D) The person, through loan covenants or any other means, has the right to restrict, or does restrict, and/or has a controlling influence over the day to day business activities or management policies of the entity to which the QS or IBQ are registered;	(E) The person, excluding banks and other financial institutions that rely on QS or IBQ as collateral for loans, through loan covenants or any other means, has the right to restrict, or does restrict, any activity related to QS or IBQ or QP or IBQ pounds, including, but not limited to, use of QS or IBQ, or the resulting QP or IBQ pounds, or disposition of fish harvested under the resulting QP or IBQ pounds; (F) The person, excluding banks and other financial institutions that rely on QS or IBQ as collateral for loans, has the right to control, or does control, the management of, or to be a controlling factor in, the entity to which the QS or IBQ, or the resulting QP or IBQ pounds, are registered; (G) The person, excluding banks and other financial institutions that rely on QS or IBQ as collateral for loans, has the right to cause or prevent, or does cause or prevent, the sale, lease or other disposition of QS or IBQ, or the resulting QP or IBQ pounds; and (H) The person has the ability through any means whatsoever to control or have a controlling influence over the entity to which QS or IBQ is registered.

Summary of CFA Concepts from Public Comment

The Council scoping at the November Council meeting will be limited to the issue of whether or not there should be safe harbor control limits for CFAs, along with all the attendant and subsidiary issues such as criteria that an entity must meet to qualify as a CFA, the level of the limit, etc. However, public comment on a number of other CFA issues has been received and will be solicited at the public hearings scheduled for the end of October. This summary covers some of the public comment received on the issue of safe harbor control limits for CFAs as well as other CFA related issues.

The MSA includes specific provisions about fishing community eligibility to participate in a catch share program (see Appendix 1 to this document for MSA language). However, this language does not prevent the Council from establishing privileges for other kinds of entities associated with fishing communities. Specifically, the NOAA NOAA Technical Memorandum providing guidance on the MSA limited access privilege program (LAPP) provisions states:

> In summary, the revised MSA sets up procedures which allows Councils to create FCs [fishing communities] or RFAs [regional fishery associations] using a specific set of eligibility criteria and a second set of considerations for developing participation criteria. Once formed, both can hold LAPs [limited access privileges, like QS/QP] if they meet the legally recognized criteria, however only FCs can receive LAPs in an initial allocation. Apparently, Councils can also develop LAP programs whereby LAPs can be held by or allocated to any other legally recognized entity, which do not necessarily have to be specified as RFAs or FCs. The program would have to comply with the general LAP mandates contained in the revised MSA. If community-based entities are used, Councils have the option of requiring operation plans to ensure stated criteria are met. (The Design and Use of Limited Access Privilege Programs, NOAA Technical Memorandum NMFS-F/SPO-86, p. 42).

Safe Harbors Control Limits

The Council has received some very specific public comment and proposals in support of safe harbor control limits for CFA (CFA control limits above those that apply to other entities) as well as comment in opposition to such safe harbor limits for CFAs. Groups with community interests have testified on both sides of this issue. Table 3 provides a summary of the types of provisions and options which were proposed in public comment at the September 2010 Council meeting, with respect to the creation of a CFA that would have a safe harbor. Appendix 2 provides CFA concepts from public comment the Council received on CFAs in the spring of 2009. The spring of 2009 document covers safe harbors as well as other CFA provisions.

Table 3. Some possible elements and options for CFA safe harbor control limits.

	Some Possible Types of Provisions	Some Options Suggested in Public Comment
CFA Special Privileges	Current Scoping Priority (for November 2010 Council meeting): Allow CFAs to control QS in excess of control limits. The Council voted to consider limits up to 2.5 times greater than those applying to other entities.	Allow CFAs to control 1.5 to 2 times what other entities are allowed to control (except for whiting)[1] Alternatively, increase the control caps only for overfished species.
	Scoping for Future Actions (at CFA hearings) Provide CFAs with access to adaptive management program quota pounds.	
CFA Organization		
Type of Legal Organization	CFAs might be organized as corporations, trusts, etc.	Require organization as a non-profit profit corporation, 501(c)(4) social welfare organization. Allow CFAs to be organized as another type of entity, controlled by fishermen.
Control of CFA	Board of directors	Must be appointed by local municipality
	A minimum number of board members.	At least 5
	Limit vessel owner and processor participation on board.	No more than 20% vessel owners or their representatives. Alternatively: ensure that fishermen have the lead in CFAs. No more than 20% processors or their reps.
	Other	Must be community members.
CFA Agreements and Activities		
Organizational Agreements:	Include goals and enforceable performance standards to address goals.	Possible Goals: Community stability • Facilitate new entry. • Stabilize business environment (e.g. require landings be made locally). • Enhance value (e.g. require particular fishing and delivery methods). Harvest Sustainability • Minimize bycatch • Participate in activities intended to successfully manage bycatch on a fishery-wide scale (research, risk pool participation, etc) • Minimize adverse fishing gear impacts on habitat • Enhance stock productivity (e.g. area management or measures to protect age structure).
Harvest and Harvest Agreements	Conditions applying to those harvesting CFA QP.	Prohibit CFAs from harvesting their own QP. Require that CFAs contract with co-operatives organized under the Fishermen's Collective Marketing Act. Require that individual <u>entities</u> comprising the FCMA coop not receive QP from the CFA that is in excess of the <u>vessel</u> QP accumulation limit. Include provisions needed for CFA to enforce standards and meet reporting requirements. Participate in fishery-wide initiatives for successfully managing overfished species catch

[1/] Also, it was suggested the limits be 60% for sablefish south of 36^{o} 0'N Latitude, and shortspine thornyheads south of 34^{o}27' N Latitude. The alternative view was voiced that if one community accumulated 60% of the QS for a species that this would not leave much for another community in the same area.

Reports	Timing and content.	Require biennial reports to document compliance, progress on goals, and facilitate fishery policy evaluation.[2]
CFA Approval and Renewal	Initial approval	NMFS would review and approve applications and CFA agreements[3]. Review and approval standard; i.e., insure required documents are submitted, and that required elements are reflected in the documents, but NMFS does not undertake substantive review for adequacy of elements relative to Council goal compliance. PFMC receives annual reports and reviews for goal compliance. PFMC initiates program modifications as necessary to insure PFMC goals are met.
	Periodic renewal	CFA agreements must be resubmitted for approval every. Option 1. Two years. Option 2. Five years (coinciding with program review cycle).
	Renewal on modification	Resubmit for approval with modification of agreement or change in board of director membership.

Other Potential CFA Policies

While the Council will not be scoping policy on issues other than those related to providing CFAs with a safe harbor exemption from control limits, it is interested in hearing more from the public about the possible uses for CFAs and the fishery policies that might facilitate those uses. The following are a few of the ideas which have been presented to date. Additional ideas are provided in Appendix 2 to this document.

CFA might operate risk pools. The CFA would not necessarily directly control the quota (QS or QP) obligated to the risk pool but would facilitate agreement between risk pool participants, management of the transfers required under the risk pool, and communications among risk pool members. Fishermen would be responsible to the group for their bycatch rates and modification to fishing behavior needed to reduce excessive rates. It is proposed that any QS or QP that is obligated to the pool but not directly controlled by the CFA would not be subject to the control limits. The CFA would also be able to control its own QS and QP but the CFA would be subject to control limits for such quota. Existing policy under the trawl rationalization program appears to allow the formation and operation of this type of CFA without additional modifications, assuming that it is correct that quota not directly controlled by the CFA would not count toward

---

2/ Items required for the biennial report might include:

- Total amount of quota share and quota poundage, by species, held or harvested on behalf of the CFA by year.
- Economic impacts of CFA activities on the community including ex-vessel revenue, location of processing, and distribution of economic activity generated as a result of CFA regulations and harvester/processor activities.
- Social impacts on the community, such as documentation of new entry, creation of local fishermen's cooperatives, or other non-market social effects attributed or related to CFA existence.
- Harvest volume including bycatch and discard quantities by year and month.
- Spatial footprint of fishing effort, including documentation of particular habitat areas that are of interest and measures taken in response to the identification of those areas.

Other measures taken to enhance sustainability or modify the activities of the harvesting cooperative.

3 Items required for application packet might include:

- Corporate documents (i.e., Articles of Incorporation and Bylaws) for the CFA and for the FCMA cooperative to which the CFA will assign its QP;
- The agreement under which the CFA assigns QP to the FCMA cooperative, which identifies the performance standards to be met by the FCMA cooperative;
- Resolution(s) of support from the municipal governing body of the CFA community or communities in the CFA region.

a CFA control limit. If that assumption is not correct, a policy modification would be required to create such an exception.

CFAs as a Trade and Communication Center. In addition and related to operating a risk pool, CFAs might facilitate the exchange of QP between larger deeper water vessels and smaller near shore vessels, as well as information about hot spots to fish in and avoid. No special policies are proposed to support this function.

CFAs as an Observer Pool Manager. CFAs might be used in a local port to coordinate fishing and offloading activities and thereby reduce costs for observers and shoreside monitors. The CFAs could provide a single offloading facility for fish that would be transferred to processing plants (making more efficient use of plant monitor time and meeting other infrastructure needs). No special policies are proposed to support this function.

CFAs as a Vehicle for QP for the Adaptive Management Program. Community based groups have voiced both support and opposition to the idea of distributing adaptive management QP to CFAs. On the one hand, if the adaptive management program (AMP) QP is to be used for the purpose of benefiting particular communities, the CFAs might provide a strong link between the policy intent and the community to be benefited. On the other hand, some see allocation of AMP QP to CFAs as a policy idea modeled after Alaska where the level of community dependence is much greater. This reallocation of trawl quota to a specific area would water-down the program. These are only two example views on this issue and do not represent the entire range of arguments on the topic. The Council will be addressing use of the AMP QP at a later time in the policy development process.

Hearings on Safe Harbors for CFAs

The Council will hold public hearings on development of CFA provisions for its groundfish trawl catch share plan. During the public hearing, comment will be solicited on the control limit exception for CFAs as well as other CFA provisions that might be added to the trawl rationalization program. Comment is sought on both alternatives and impacts to consider. At its November 2010 meeting, the only CFA issue the Council will be scoping is whether to provide CFAs with an exception to the control limit, however, other provisions for CFAs that are identified through these public hearings may be prioritized for later trailing actions. The CFA hearings will be held at the following locations, dates, times, and places:

Location	Date Day/Time	Meeting Place
EUREKA, CA	Oct 25 Monday 7 p.m.	Red Lion Hotel Eureka Evergreen Ballroom 1929 Fourth Street Eureka, CA 95501 707-445-0844
PORTLAND, OR	Oct 27 Wednesday 2 p.m.	Sheraton Portland Airport Mount Hood Room A 8235 NE Airport Way Portland, OR 97220 503-281-2500
MONTEREY, CA	Oct 28 Thursday 2 p.m.	Monterey Youth Center 777 Pearl Street Monterey, CA 93940 831-646-3873

Table 4. **Control and vessel limits.**

Species Category	Vessel Limit (Applies to all QP in a Vessel Account, Used and Unused)	Vessel Unused QP Limit**	QS Control Lim
Nonwhiting Groundfish Species	3.2%		2.7%
Lingcod - coastwide	3.8%		2.5%
Pacific Cod	20.0%		12.0%
Pacific whiting (shoreside)	15.0%		10.0%
Pacific whiting (mothership)	30.0%		20.0%
Sablefish			
N. of 36° (Monterey north)	4.5%		3.0%
S. of 36° (Conception area)	15.0%		10.0%
PACIFIC OCEAN PERCH	6.0%	4.0%	4.0%
WIDOW ROCKFISH *	8.5%	5.1%	5.1%
CANARY ROCKFISH	10.0%	4.4%	4.4%
Chilipepper Rockfish	15.0%		10.0%
BOCACCIO	15.4%	13.2%	13.2%
Splitnose Rockfish	15.0%		10.0%
Yellowtail Rockfish	7.5%		5.0%
Shortspine Thornyhead			
N. of 34°27'	9.0%		6.0%
S. of 34°27'	9.0%		6.0%
Longspine Thornyhead			
N. of 34°27'	9.0%		6.0%
COWCOD	17.7%	17.7%	17.7%
DARKBLOTCHED	6.8%	4.5%	4.5%
YELLOWEYE	11.4%	5.7%	5.7%
Minor Rockfish North			
Shelf Species	7.5%		5.0%
Slope Species	7.5%		5.0%
Minor Rockfish South			
Shelf Species	13.5%		9.0%
Slope Species	9.0%		6.0%
Dover sole	3.9%		2.6%
English Sole	7.5%		5.0%
Petrale Sole	4.5%		3.0%
Arrowtooth Flounder	20.0%		10.0%
Starry Flounder	20.0%		10.0%
Other Flatfish	15.0%		10.0%
Pacific Halibut	14.4%	5.4%	5.4%

* If widow rockfish is rebuilt before initial allocation of QS, the vessel limit will be set at 1.5 times the control limit.

** A limit on the amount of unused QP that may be in a vessel account at any one time.

Severability of The Mothership Catcher-Vessel Catch History/Endorsements From the Permits

At the end of the Amendment 20 process, the Washington Department of Fish and Wildlife (WDFW) clarified that it had been its intent that the Mothership Catcher-Vessel (MSCV) catch history be separable from the limited entry permit to which it is attached (see Agenda Item I.1.b, Supplemental WDFW Report, April 2010). Given the initial allocation structure of the mothership and shoreside sectors, all mothership-endorsed catcher-vessel (CV) permits will receive shoreside QS and catch history for both sectors. WDFW viewed the endorsement as being separate from the catch history and intended to allow the mothership whiting catch history for these sectors to be separated from the permit and transferable to other permits.

One of the concerns is that there are some MSCV permits with very small allocations. Those permit holders would want to either transfer ownership of that catch history to another MSCV permit (without having to sell their limited entry permit), or acquire additional catch history to remain in the fishery. For MSCV permits receiving very small allocations, acquiring additional catch history would require a substantial investment, so it is anticipated that such permits would likely choose to divest themselves of the small amount of quota they were issued. However, under the current MSCV permit structure, the opportunity to permanently acquire or divest catch history would not be available unless the catch history is made severable. Without severability, it is possible for permits receiving small allocations of catch history for at- mothership sector to arrange for the harvest of that allocation without necessarily participating in the fishery themselves, however, the process unnecessarily burdensome. Specifically, each year the permits with small allocations can join co-ops and allow other members of the co-op to harvest the allocation for them (essentially lease the allocation to another co-op member). Maintaining membership in the co-op and conducting the annual transfers would entail annual transaction costs for both the co-op and the permits receiving the small allocation. Allowing permanent severance of the catch history from the permit would be more effective and efficient.[4]

With respect to achieving severance of the catch history from the permits, options might be specified such that the catch history alone is severed (leaving the MSCV endorsement with the permit), or the MSCV endorsement is severed from the permit together with the catch history (i.e. the endorsement and catch history stay together). The latter approach, allowing the severance of catch history together with the endorsement, was included as an option in the EIS and is addressed on pages B-52, B-54, and B-60 of Appendix B to the Final Environmental Impact Statement (EIS). Under either approach, the severed catch history (or catch history and endorsement) could then be stacked on a permit which already has MSCV catch history and endorsement. Because the MSCV endorsement alone, without catch history, confers few additional privileges relative to a trawl permit that does not have an MSCV endorsement (an MSCV endorsement is not required to harvest fish for the co-op), the analysis which has already

[4/] If because of the burden involved in joining a co-op some permit owner chooses not to go through that process, some fish may end up unharvested or a non-co-op fishery many develop. If a permit does not go into the co-op, its allocation would go to the non-co-op fishery and could go unharvested if no active vessels choose to fish in the non-co-op fishery. Alternatively, if there are a number of permits for which the small size of their allocation makes it not worthwhile to pursue co-op membership, the aggregate amount that ends up in the non-co-op fishery could provide an incentive for at least some vessels to opt out of the co-op system.

been produced generally applies to both approaches outlined in this paragraph (i.e. applies to separating the catch history from the MSCV endorsement or keeping the catch history with the MSCV endorsement and severing both from the permit).

When stacked, the catch history and endorsement could either be merged with that of the existing permit or maintained as separately on the permit. If an approach is developed in which the catch history is merged with that of the existing permit, the question arises as to whether the catch history might be subdivided at a later point. If subdivision is allowed but only back into exactly the same amounts that were originally combined, then whether the catch histories are truly merged is a matter of semantics. If subdivision is allowed into units of any size, then there would be administrative costs and other impacts to consider that would make this action more complex and outside of the scope of severability options that was addressed in the trawl rationalization EIS (Amendment 20).

Adaptive Management Quota Pounds Pass Year 3 Pass Through

The Council's trawl catch share program includes a set aside of 10% of the nonwhiting QS for an adaptive management program. For the first two years of the program, the annually issued QP derived from this set aside will be passed through to the QS holders in proportion to their holdings of QS. The catch share program specifies that the Council will develop alternative criteria for distribution the adaptive management QP beginning in year 3 of the program. At its September 2010 meeting, the Council indicated its intent to consider a one year continuance of the pass through as part of one of the main trailing action issues. Alternatively, a continuation of the pass through might be specified during the biennial specifications process for 2013-2014; or even if the Council specifies a third year pass through prior to the specifications process, it might come up with an alternative (non-pass through) distribution criteria during the 2013-2014 specifications process.

PFMC
10/14/10

APPENDIX 1: EXCERPT FROM THE MAGNUSON-STEVENS ACT

109-479
SEC. 303A. LIMITED ACCESS PRIVILEGE PRGRAMS.

(c) REQUIREMENTS FOR LIMITED ACCESS PRIVILEGES.—

(3) FISHING COMMUNITIES.—

(A) IN GENERAL.—

(i) ELIGIBILITY.—To be eligible to participate in a limited access privilege program to harvest fish, a fishing community shall—

(I) be located within the management area of the relevant Council;

(II) meet criteria developed by the relevant Council, approved by the Secretary, and published in the Federal Register;

(III) consist of residents who conduct commercial or recreational fishing, processing, or fishery-dependent support businesses within the Council's management area; and

(IV) develop and submit a community sustainability plan to the Council and the Secretary that demonstrates how the plan will address the social and economic development needs of coastal communities, including those that have not historically had the resources to participate in the fishery, for approval based on criteria developed by the Council that have been approved by the Secretary and published in the Federal Register.

(ii) FAILURE TO COMPLY WITH PLAN.—The Secretary shall deny or revoke limited access privileges granted under this section for any person who fails to comply with the requirements of the community sustainability plan. Any limited access privileges denied or revoked under this section may be reallocated to other eligible members of the fishing community.

(B) PARTICIPATION CRITERIA.—In developing participation criteria for eligible communities under this paragraph, a Council shall consider—

(i) traditional fishing or processing practices in, and dependence on, the fishery;

(ii) the cultural and social framework relevant to the fishery;

(iii) economic barriers to access to fishery;

(iv) the existence and severity of projected economic and social impacts associated with implementation of limited access privilege programs on harvesters, captains, crew, processors, and other businesses substantially dependent upon the fishery in the region or subregion;

(v) the expected effectiveness, operational transparency, and equitability of the community sustainability plan; and

(vi) the potential for improving economic conditions in remote coastal communities lacking resources to participate in harvesting or processing activities in the fishery.

APPENDIX 2:
Spring 2009 Materials on Community Fishing Associations

OUTLINE OF POTENTIAL ELEMENTS FOR COMMUNITY FISHING ASSOCIATION (CFA) PROVISIONS

At the March 2009 meeting, the Council tasked staff with presenting options for defining a Community Fishing Association (CFA) using the NOAA Technical Guidance Memorandum called the Design and Use of Limited Access Privilege Programs ((F.4.a, Attachment 1) and The Nature Conservancy's public comment letter (F.4.a, Attachment 2) and as a starting point. The NOAA Technical Guidance Memorandum referred the reader to language in the Magnuson-Stevens Act which describes eligibility and establishing criteria for Fishing Communities and Regional Fishing Associations. Those requirements are listed in Tables 1 and 2 below.

Table 1. Requirements of the MSA with respect to eligibility and CFAs and Regional Fishing Associations (RFA).

Eligibility Requirement	303A Reference	
A fishing community/RFA shall	Fishing Communities	RFA
Be located within a community	(3)(A)(i)(I)	(4)(A)(i)
Meet other Council criteria	(3)(A)(i)(II)	(4)(A)(ii)
Be a voluntary association with bylaws and operating procedures		(4)(A)(iii)
Consist of harvesters, processors, support businesses and communities	Residents within the area: (3)(A)(i)(III)	Those who hold QS (4)(A)(iv)
Not be eligible to receive QS		(4)(A)(v)
Provide a plan	(3)(A)(i)(IV)	(4)(A)(iv)

Table 2. Requirements of the MSA with respect to factors the Council is required to consider in establishing criteria for Fishing Communities and RFAs.

Participation Criteria	303A Reference	
The Council shall consider	Fishing Communities	RFA
traditional fishing or processing practices in and dependence on the fishery	(3)(B)(i)	(4)(B)(i)
the cultural and social framework	(3)(B)(ii)	(4)(B)(ii)
economic barriers to access the fishery	(3)(B)(iii)	(4)(B)(iii)
existence and severity of projected impacts	(3)(B)(iv)	(4)(B)(iv)
administrative and fiduciary soundness of the association		(4)(A)(v)
effectiveness, transparency and equitability	(3)(B)(v)	(4)(A)(vi)
potential for helping remote communities lacking resources	(3)(B)(vi)	

In addition to the MSA requirements, The Nature Conservancy and the Pacific Coast Federation of Fishermen's Associations (PCFFA) submitted public comment letters regarding the definition, structure and guidelines of Community Fishing Associations (CFA). The following text is a "strawman" description of a Community Fishing Association developed using the MSA, The Nature Conservancy, and including a proposed definition, qualification criteria, and other requirements and standards. Text and concepts from the MSA, TNC and PCFFA were used in developing this "strawman" proposal. Please note that in the short amount of time available prior to the April Briefing Book deadline dictated that only a limited, rough presentation on possible elements be included. Additional analysis will be presented by Council staff at the April Council meeting. Council staff does not endorse any of the descriptive elements or associated language, but rather presents it here in the spirit of facilitating further development.

Definition of a CFA

An association that acquires QS/QP and distributes QP for delivery within the geographic community that the CFA represents. CFAs receive special considerations that are not made available to other participants in the trawl rationalization program.

Qualification as a CFA

To be recognized as a CFA, an entity must

1. Meet the geographic designation and membership requirements.
2. Have the support of local governing entities (county, city or port district).
3. Meet the organizational standards.
4. Develop an adequate community sustainability plan (MSA 303A(c)(3)(i)(I) and (IV).

Geographic Designations and Community Affiliations

CFAs must be located within the management area of the Council ((Based on MSA 303A(c)(3)).

Geographic Designation Option 1: The geographic areas served by a CFA may not overlap. (i.e. a community may be represented by only one CFA)
Geographic Designation Option 2: The geographic areas served by a CFA may overlap.

Community Affiliations Option 1: A CFA may only represent one community. A single management company **may/may not** administer multiple CFAs.
Community Affiliations Option 2: A CFA may represent multiple communities. The geographic area covered by a CFA may not exceed (X miles of the coast, X adjacent counties, X adjacent port districts).
Community Affiliations Option 3: A CFA may represent multiple communities. There will be no restriction on the geographic size of the CFA.

Community Support. A CFA must demonstrate substantial community support of community members and governing jurisdictions in the area it seeks to represent.

Membership Requirements

Members of the CFAs must be community residents that join together voluntarily.

Option 1 (Based on MSA 303A(c)(3)). Only community residents who conduct commercial fishing, processing businesses, or fishery dependent support businesses may be members of the CFA. Association members may include those who will directly benefit from the distribution of QS/QP. Direct benefits means they will either catch or receive fish in association with the QS/QP provided by the CFA.

Option 2. Only community residents may be members of the CFA. Association member may not include those who will directly benefit from the distribution of CFA QS/QP ("direct benefit" is defined in Option 1). [5]

Note: In further developing membership requirements, one might use a worksheet like the following to delineate the types of entities that must/may/may not participate in a CFA.

Type of Entity	Must Include	May Include	May Not Include
Governing Authorities (counties, cities, port districts)			
Harvesters	(e.g. at least two)		
Processors	(e.g. at least one)		
Industry Associations			
Other Public Interest Groups			
Corporations			
Partnerships			
Individuals			

Organization and Operational Standards

A CFA must be organized as a corporation under the laws of the United States.

Beneficiaries: CFAs

Must only distribute QP to their own members.
May distribute to their members as well as nonmembers.
Must offer those outside the association the same opportunity to qualify as a member in a reasonable timeframe.

Community Sustainability Plan

The CFA should develop a community sustainability plan that includes the following:

1. Specification of the organizations goals and objectives and the means by which it intends to meet those goals and objectives.
2. Description of how the CFA will contribute to the social, economic development, and conservation and monitoring needs of the fishery locally, including the needs of entry-level and small vessel owner-operators, captains, and crew. The description shall include anticipated efforts to address the following as necessary to maintain the characteristic of the community or support its economic development:
    a. sustaining effort by trawl and other groundfish fisheries;
    b. maintaining crew, processing and seasonal employment opportunities;
    c. maintaining local processing activity;

[5] For example, the CFA might. distribute QP via auction using contracts that require the recipient to deliver to buyers within the community the QS and a certain amount of matching QS

d. meeting local community and municipality needs;
e. investing in local infrastructure; and
f. addressing potential adverse impacts on the nontrawl sector.

Application for Status as a CFA

Applications will include:

1. Articles of incorporation and bylaws.
2. A list of members of the CFA and the nature of their involvement/interest in the fishery.
3. Organization chart and explanation of management structure.
4. A sustainability plan.
5. All information needed for NMFS to assess compliance with control limits.
6. Operating procedures including description of
    a. roles and responsibilities of members of the association, staff, and contractors;
    b. the process and criteria by which QP will be distributed; and
    c. dispute resolution processes.
7. Documentation that shows that all other CFA eligibility requirements have been met.

Criteria for Evaluating Applications and Approval Process

CFAs will be approved provided

A complete application has been provided.

All requirements listed above are met and approved by the Council, including those pertaining to geographic representation and community support.

Approval will include specification of special responsibilities and considerations being afforded the CFA (e.g. the level of QS control that will be afforded the CFA).

General Participation and Special Considerations

CFAs will participate in common with all other participants in the IFQ program and have the same rights and responsibilities, except with respect to special responsibilities and considerations provided for by the Council and through NMFS regulations. General participation includes such things as the obligation to transfer QP to vessel accounts each year and the opportunity for those vessels to use nontrawl gears to harvest their QP under terms identical to those which apply to all other participants.

The special considerations provided may include, but not be limited to, higher accumulation limits than provided for other entities and a higher priority for the allocation of QP under an adaptive management program.

Special Consideration - Accumulation Limits

Accumulation limits may be different (higher) for CFAs than for other entities that are eligible to own quota shares.

Accumulation limits will be on the June 2009 Council agenda.

Special Consideration – Acquisition of QS During the Transfer Moratorium

Transfers of QS to CFAs during the first two years of the trawl rationalization program would not approved, while all other transfer would be prohibited.

Special Consideration – Acquisition of QS During the Divestment Period

If the Council chooses to allow a divestiture period, CFAs could be the intended recipient or buyer of those QS.

Special Responsibility - Reporting Requirement

CFAs would be required to report on specific aspects of participants, CFA performance measures, etc.

Agenda Item H.5.a
Attachment 3
November 2010

HISTORIC DATA ON TRAWL BYCATCH OF PACIFIC HALIBUT AND HINDCAST ALLOCATIONS

Table. Historic total constant exploitation yield (TCEY), estimates of trawl bycatch mortality, and allocations that might have been made based on the Amendment 21 formula for allocating a cap on trawl bycatch mortality (shaded cells indicate pounds are in round weight).

		Pounds Legal and Sublegal Sized Halibut (O32 & U32)* (Historic Data Does Not Include At-sea Bycatch, Old Postseason Estimates Do Not include California Trawl)						
Year	TCEY**	IPHC Trawl Halibut Preseason Bycatch Mortality Estimate	**Old ŧ** Postseason Trawl Halibut Bycatch Mortality Estimate	**New ŧŧ** Postseason Bottom Trawl Halibut Bycatch Mortality Estimate	Amendment 21 **Trawl** Allocation (Calculated Consistant with Environmental Impact Statement) - Total Mortality Limit Legal (O32) and Sublegal (U32) (The lesser of 15% of TCEY or 130,000 lbs net wt)			Amendment 21 **IBQ** Allocation (10 mt removed for south of 40° 10' and at-sea fishery)
	Legal Sized (O32) (Millions of Lbs Net Wt) ***	Legal and Sublegal Sized (O32+U32) (Net Wt)	Legal and Sublegal Sized (O32+U32) (Net Wt)	Legal and Sublegal Sized (O32 + U32) (Round Wt)	15% of TCEY (Net Wt)	Lesser of 15% or 130,000 lbs (Net Wt)	Lesser of 15% or 130,000 lbs (Round Wt)	Legal and Sublegal Sized (O32+U32) (Round Wt)
2004	2.10	512,000	260,590	293,214	315,000	130,000	172,900	150,854
2005	1.56	462,000	417,863	632,726	234,000	130,000	172,900	150,854
2006	1.71	245,000	345,648	533,518	256,500	130,000	172,900	150,854
2007	1.58	358,000	257,338	460,766	237,000	130,000	172,900	150,854
2008	0.94	333,000	280,515	458,561	141,000	130,000	172,900	150,854
2009	0.64	257,000	n/a	553,360	96,000	96,000	127,680	105,634
2010	0.82	281,000	n/a	n/a	123,000	123,000	163,590	141,544

Notes: * Since no trawl caught fish are "legal" the IPHC preferred terminology is over 32" (O32) for legal sized halibut and under 32" (U32) for sublegals. To assist in the transition to this new terminology, the expressions are maintained side-by-side in this table.

** Value based on exploitable biomass approximately equivalent to legal sized halibut net weight.

*** The term "net weight" (headed and gutted) is used rather than "dressed" because the IPHC generally views dressed weight to mean only evisceated (head left on). The net weight to round weigh conversion factor is 1.33.

ŧ Wallace and Hastie, 2009, (Table 9).

ŧŧ Heery et. al. 2010 (Table 5).

Agenda Item H.5.a
Attachment 4
November 2010

CALENDAR FOR TRAILING ACTIONS ON TRAWL CATCH SHARES

Table. List of trailing actions prioritized by the Council for immediate action and possible calendar for each. Shaded months indicate periods of Council activity.

	2010	2011					2012						2013	Possible Lead Entity(ies)	Possible Analytical Support
Topic	Nov	Mar	Apr	Jun	Sep	Nov	Jan 1	Mar	Apr	Jun	Sep	Nov	Jan 1		
1 A-21 Supersedence of A-6		PPA		FPA					Impl					Council/GAP	Council Staff
2 Cost Recovery			PPA	FPA			Impl							NMFS	NMFS & Cncl Staff
3 QS/QP Control Rule Safe Harbor (CFAs, Risk Pools, & Financing)				PPA	FPA					Impl				GAC or Policy Workgroup w/Legal Assistance	Council Staff w/Contractor
4 Severability of Catch History/ Endorsement From Mothership/Catcher Vessel Permit		PPA		FPA					Impl					Council/GAP	Council Staff w/Contractor

PPA = Council selects preliminary preferred alternative. **FPA** = Council selects final preferred alternaive. **Impl** = Target implementation date.
A third year pass-thru for Adaptive Management Plan quota pounds may be considered in conjunction with the above main trailing actions.

SUMMARY OF SCOPING HEARING INPUT ON COMMUNITY FISHING ASSOCIATION (CFA) POLICY

Scoping hearings on CFA policy were held during the week of October 25-29, 2010. Summaries of the individual hearings are included in following pages.

There was a wide range of opinion regarding development of CFA policy to provide quota share control limit exceptions for qualifying entities (safe harbor provisions). The range was from: 1) don't do it-the existing quota caps are adequate-to 2) allow quota share control limit exceptions based on CFA area needs-without regard to any particular level of quota share cap.

While the main focus of the Council deliberations at this time is the issue of whether or not CFAs should be provided higher control limits than other entities, these hearings also solicited comments on other types of provisions that might be implemented to benefit CFAs. One group requested that CFAs be allowed to accumulate quota shares and to distribute quota pounds specifically to CFA-area vessels without regard to trawl permit possession regulations. Comments were also received on providing a direct allocation to CFAs (through the Adaptive Management Program quota or reallocation to CFAs of that QS associated with the history of buyback permits), or providing CFAs with access to the QS that will be redistributed through the divestiture requirements. Another group supported existing trawl permit regulations and urged that harvest of quota pounds be conducted in an open bid manner without regard to vessel origin or affiliation.

While the topic of the hearings was CFAs, testimony at the hearings was consistent in expressing concern over early tie-up of vessels due to attainment of overfished species quotas. These quotas are very low for many vessels and some species. Some felt the overfished species issue should be addressed very early in the trailing regulation process. One presenter suggested there should be a "quota bank" established for the four most limiting overfished species. NOAA fisheries would manage the bank and all quota pounds of specified species would be deposited in the bank. If the quota bank concept is not viable or doable, voluntary large area risk pools (e.g., Point Conception to Cape Mendocino), would be more effective in minimizing vessel tie-ups than small-area pools (e.g., Fort Bragg, Port Orford).

It was reported that some groups are already moving forward with the development of voluntary risk pools. However, the question was raised whether such pacts represent "control" in the context of QS/QP regulations. NOAA Legal Council may wish to comment on this concern.

The Briefing Book document pertaining to trailing action scoping (Agenda Item H.5.a., Attachment 1) was made available for public review at the hearings. Table 3 of that document contains a first cut at CFA policy options based on Council and public input provided through the September 2010 Council meeting. *With respect to proceeding on the Council's immediate task of developing safe harbor exception options for CFAs, Council guidance is sought on the content of Table 3 taking into account public input provided at the recent scoping hearings and at the current (November) meeting.*

EUREKA SCOPING HEARING ON COMMUNITY FISHING ASSOCIATIONS

Date:	October 25, 2010	Hearing Officer:	Mr. Don Hansen
Location:	Red Lion Hotel Eureka, CA		
Attendance:	6		
Testifying:	1	Council Staff:	Mr. LB Boydstun
Organizations Represented: Fishermen's Marketing Association			

Synopsis of Testimony

Special Opening Remarks

Mr. Boydstun provided a summary of the issue; i.e., purpose and need and qualification criteria for higher Quota Share caps for CFAs.

Summary of Testimony:

- A higher cap for CFAs is a step in the wrong direction.
- NMFS should establish a "quota bank" for the most constraining overfished groundfish species (yelloweye rockfish in particular). Otherwise many vessels will be tied up early due to quota attainment for those species.

Written Statements (Attached)

- Fishermen's Marketing Association

PORTLAND SCOPING HEARING ON COMMUNITY FISHING ASSOCIATIONS

Date:	October 27, 2010	Hearing Officer:	Mr. Don Hansen
Location:	Sheraton Portland Airport Portland, OR		
Attendance:	13		
Testifying:	3	Council Staff:	Mr. LB Boydstun
Organizations Represented:	Coos Bay Trawlers Assoc, Environmental Defense Fund		

Synopsis of Testimony

Special Opening Remarks

Mr. Boydstun provided a summary of the issue; i.e., purpose and need for higher Quota Share caps for CFAs.

Summary of Testimony:

- CFAs are premature; target/ overfished species imbalances will be worked out.
- Support 1.5-2.5 times increased allowance for CFA access to IFQ caps; move forward with Burden/ Sullivan white paper (previously provided to Council).
- CFAs should be formed, but increased caps not needed; CFAs can facilitate trading of shares, sharing of observer costs, and marketing of fish.
- NOAA needs to advise what constitutes “ownership” and “control.” Is a handshake agreement control?
- Concerned was raised that risk pools can have a negative effect, taking the pressure off individuals to fish responsibly.
- Lots of owners will be forced out by species or quota limitations, which will have the effect of freeing up fish for the remaining permit holders.
- The fishery will work things out; we need to watch it develop before taking “corrective” action.

Written Statements (none)

MONTEREY SCOPING HEARING ON COMMUNITY FISHING ASSOCIATIONS

Date:	October 28, 2010	Hearing Officer:	Mr. Don Hansen
Location:	Monterey Youth Center Monterey, CA		
Attendance:	27		
Testifying:	10	Council Staff:	Mr. LB Boydstun
Organizations Represented:	Central Coast Groundfish Project, Pacific Coast Federation of Fishermen's Associations, San Francisco Crab Boat Owners Association, City of Monterey, Marine Interest Group of San Luis Obispo County		

Synopsis of Testimony

Special Opening Remarks

Mr. Boydstun provided a summary of the issue; i.e., purpose and need for higher Quota Share caps for CFAs.

Summary of Testimony:

- CFAs are needed to retain local fishing fleet and community infrastructure, but not sure about how to acquire QSs; we need to anchor fish locally; we would be concerned about governmental/ municipal involvement in CFAs because of political implications.
- Success of CFAs should be performance-based; CFA process should not be used as a way for personal or group gain.
- Make the CFA process as simple as possible (repeated several times).
- Fishermen and the public should be relied upon to make the rules for CFAs.
- CFAs should have priority access to buy-back program and divestiture fish.
- IFQ process must stop until CFA program is developed, which is required under Magnuson (legal opinion).
- Quota enhancements for CFAs should depend on size of area; 1.5-2.5 times increase may not be enough for a large area CFA and way too large for a small port.
- A clear CFA definition is needed.
- What does "control" mean? Does a verbal agreement between 2 or more fishermen constitute control and a potential violation of quota cap rules?
- Don't bog the CFA process down with possible AMP linkage; this could complicate the CFA process.
- Need to separate goals and objectives of CFAs from who harvests the fish; CFAs should be concerned with the community and secondly (or distantly) with who harvests the fish.
- CFAs should allocate fish to local vessels without the need for trawl permits (e.g., no trawl permit should be required on CFA vessels).
- The imbalance between target species and overfished species quotas will be worked out over time; fishermen will trade fish to meet their respective needs.

Written Statements (none)

Pacific Groundfish Trailing Amendment to the IFQ Program
Highly Restricted Species Quota Bank

Submitted by the Fishermen's Marketing Association
October 25, 2010

The nature of the formula and time frames selected to allocate "overfished species" in the Pacific Groundfish Trawl IFQ Program has resulted in a mismatch between the amount of target species a fisherman receives and the amount of overfished species that he will be allocated.

The amount of target species is driven largely by his catch history during the window period of 1994 to 2003. The amount of allocated bycatch is based upon bycatch rates that occurred in 2004 to 2006, but then applied to the areas that he fished in 2004 to 2006.

Management measures implemented in the early 2000's dramatically changed where many fishermen fished in the 2004 to 2006 time frame. These management measures include the establishment of Rockfish Conservation Areas (RCA) and trip limits that were greater if the fishermen were to fish an entire two month cumulative limits seaward of the RCA.

The result is that many fishermen have been allocated relatively large amounts of target species but very little, if any, bycatch that is associated with the target fish.

This problem, coupled with very low levels of allowable harvest of certain species will make the allocation of these species in the Pacific Groundfish IFQ Program the controlling factor in fishermen accessing their full complement of quota. Some of these species are restricted geographically; however, they all have a much skewed distribution in common, with some fishermen effectively receiving zero quota, while other fishermen will receive relatively a great amount (Figure 1).

The FMA proposes that the PFMC amend the IFQ program to establish a "Quota Bank" for these species. The term "Quota Bank" means a pool of fish that has not been allocated to anyone fisherman or permit owner. This pool of fish would remain part of the IFQ program, but administered by the NMFS. The Fishery Service would make the quota available to any fisherman that has caught some of the covered species, so that his account may be balanced.

The species covered by this program should include those species with the lowest allowable harvest levels. Below is a table ranking the species of concern from the lowest to the greatest allowable harvest, including Pacific halibut. Pacific ocean perch, Darkblotched rockfish, Widow rockfish, and Petrale sole all have long term trawl allocations and should not be considered for a quota bank. These four species are shown here only for comparison of allowable harvest.

Species	IFQ Allocation
Yelloweye rockfish	0.6 mt
Cowcod	1.8 mt
Canary rockfish	25.9 mt
Pacific halibut	59.0 mt
Bocaccio rockfish	60.0 mt
Pacific Ocean Perch	137.0 mt
Darkblotched rockfish	265.0 mt
Widow rockfish	491.0 mt
Petrale sole	871.0 mt

It is recognized that everyone fishing will on occasion catch some of the species contained in the bycatch pool. Therefore this system must provide a strong disincentive to catching these species, while not being punitive for the unavoidable take. However, the disincentive needs to shift to being punitive if individuals begin to treat removal of fish from the common pool as an acceptable cost of doing business

Fishermen should be encouraged to avoid the take of any of these fish. However, when a fisherman needs to make a withdrawal from the quota bank, it will occur at some cost. The types of costs that provide a significant disincentive include a cash payment, time off the water, and freezing of the vessel account.

A cash payment for a withdrawal of these species could be a poundage royalty, as provided by the Limited Access System Administration Fund (MSA 303A(d)(2)). This is the same fund established in the MSA to collect the cost recovery payments in this program. These royalty payments could increase for repeated withdrawal or for very large amounts of quota.

A cost of restricting a vessels fishing opportunity as "time off the water" is another approach that could be used as a disincentive to failing to avoid quota bank species.

An even more restrictive action than time off the water would be the freezing of a vessel account. The boat would not be able to fish for groundfish, additionally the owner would also not be able to transfer quota to another vessel account. This freezing could be done for a period of time as the cost associated with making a withdrawal.

If a quota bank approach is implemented, then the need that some have suggested to have exemptions from accumulation and control caps would be diminished if not eliminated.

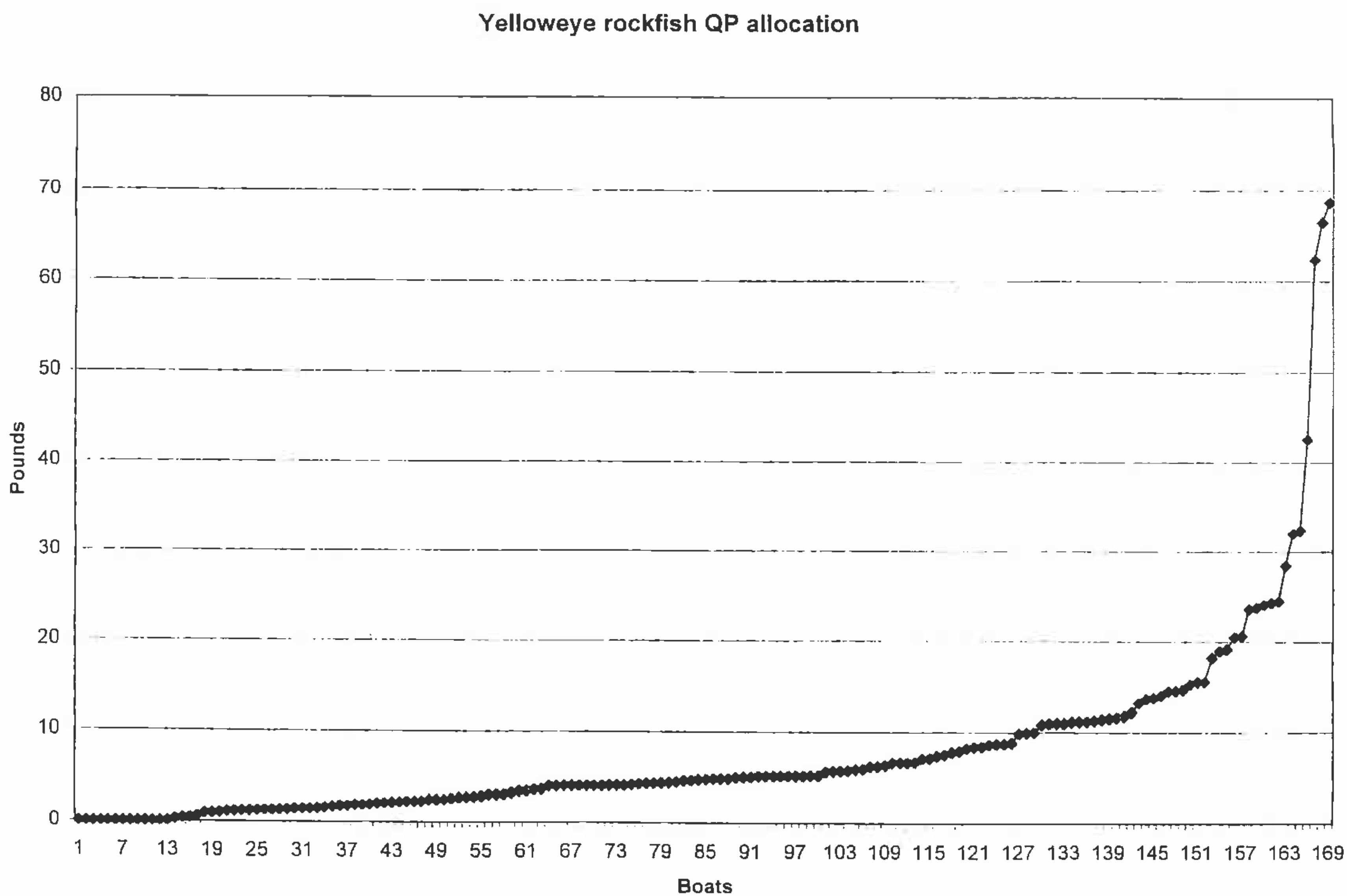

Yelloweye rockfish QP allocation
Pounds
0
10
20
30
40
50
60
70
80
Boats
1 7 13 19 25 31 37 43 49 55 61 67 73 79 85 91 97 103 109 115 121 127 133 139 145 151 157 163 169

Figure 1.

ORIGINAL FILED
2010 OCT 22 P 2:32
RICHARD W. WIEKING
CLERK, U.S. DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

Mark A. White, CA Bar No. 88332
Andrea Kendrick, CA Bar No. 225688
CHAPMAN POPIK & WHITE LLP
650 California Street, 19th Floor
San Francisco, CA 94108-2736
Tel: 415-352-3000
Fax: 415-352-3030
mwhite@chapop.com; akendrick@chapop.com

Mary L. Hudson, CA Bar No. 81407
LAW OFFICE OF MARY L. HUDSON
1505 Bridgeway, Suite 206
Sausalito, CA 94965
Tel: 415-331-7712
mlhudson@earthlink.net

Alan Waltner, CA Bar No. 85333
LAW OFFICES OF ALAN WALTNER
779 Dolores Street
San Francisco, CA 94110
Tel: 415-641-4641
Fax: 415-738-8310
waltnerlaw@gmail.com

Attorneys for Plaintiffs Pacific Coast Federation of Fishermen's Associations, Port Orford Ocean Resource Team and San Francisco Crab Boat Owners Association

E-filing

UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

MEJ

PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATIONS; PORT ORFORD OCEAN RESOURCE TEAM; and SAN FRANCISCO CRAB BOAT OWNERS ASSOCIATION, Plaintiffs, vs. GARY LOCKE, in his official capacity as Secretary of the United States Department of Commerce; NATIONAL MARINE FISHERIES SERVICE; and NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, Defendants.	Case No.: CV 10 4790 **COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF** **(ADMINISTRATIVE PROCEDURE ACT CASE)**

<u>**INTRODUCTION**</u>

1. This lawsuit challenges actions by the Defendant federal fishery agencies to restructure the Pacific Coast groundfish fishery by creating and distributing individual fishing quota ("IFQ") shares to qualifying trawl permit owners, locking into place the dominance of bottom trawl fishing in this major ocean fishery. The IFQ shares will bestow on each trawl permittee an exclusive and long-term fixed share – collectively, 90 percent – of the total allowable catch for the groundfish fishery.

2. This IFQ program purports to implement a 2006 amendment of the Magnuson-Stevens Fishery Conservation and Management Act ("MSA," 16 U.S.C. § 1801 *et seq*.; § 1853a) authorizing the use of IFQs to manage United States fisheries, but the program instead violates numerous requirements of the 2006 law and represents a wholesale abandonment of Congressional priorities for conservation of marine resources and for inclusiveness in IFQ program participation.

3. The challenged actions by the Defendants are (i) the promulgation, on October 1, 2010, of final rules to implement the IFQ program, and (ii) the underlying approvals of Amendments 20 and 21 of the Pacific Coast Groundfish Fishery Management Plan, which describe the IFQ program. On January 1, 2011, the IFQ program will go into effect and Defendants are already processing share requests from the trawlers.

4. Plaintiffs in this action are organizations representing over 700 fishing men and women on the Pacific Coast who harvest groundfish primarily with non-trawl gear such as hook-and-line and traps. With implementation of the IFQ Program, these Plaintiffs will suffer serious and unwarranted injuries including, *inter alia,* loss of fishing opportunity to increasingly powerful bottom trawl vessels, damage to fishery resources, upset of established markets, impacts on fishing-dependent communities and infrastructure, and exclusion from Congressionally mandated measures to offset these and other adverse impacts.

5. In numerous ways, this Program fails to carry out Congressional purpose and directive to promote the conservation of fishery resources, prevent the privatization of public trust fisheries, and ensure inclusiveness in IFQ programs. The Program's allocation of long-

term, fixed quotas to licensees using bottom trawl, the type of gear with the worst record of bycatch (catch of non-target species) and fish habitat damage, is not supported by the best scientific information available, as required by the MSA. In contrast, that scientific information demonstrates that the non-trawl fishing methods used by Plaintiffs' members result in substantially less bycatch than bottom trawling and minimal to no environmental damage. The Program elevates efficiency and profitability in the trawl sector over conservation of fishery resources. The Program ignores statutory constraints on control and transferability of IFQs, and allows essentially unrestricted transfer of these interests in public trust fisheries.

6. The Program also fails to adhere to requirements for participation of fishing communities, including participation in initial allocation of quota shares, and does nothing to mitigate adverse impacts on fishing businesses, jobs, and hard-hit communities. The Program fails to adhere to mandatory requirements concerning the minimization of bycatch, prompt rebuilding of depleted stocks, and monitoring of catch and landings.

7. This complaint also challenges the Defendants' approval of two Environmental Impact Statements ("EISs"), one for each of the plan amendments. These impact statements fail to comply with requirements of the National Environmental Policy Act ("NEPA," 42 U.S.C. § 4321, *et seq.*), including requirements pertaining to purposes and scope of the quota program, consideration of a reasonable range of alternatives, disclosure and analysis of the program's impacts, and adoption of measures to mitigate impacts.

PARTIES

8. Plaintiff Pacific Coast Federation of Fishermen's Associations ("PCFFA") is a California 501 (c)(4) trade organization based in San Francisco, California. PCFFA is the largest commercial fishing organization on the West Coast. PCFFA is composed of 14 different organizations, representing working men and women in the West Coast commercial fishing fleet. Individual members fish primarily with non-trawl gear under limited entry and open access regimes, targeting rockfish, sablefish, and other groundfish, as well as a variety of non-groundfish species. PCFFA deals with resource protection and policy issues of importance to the fishing industry and advocates concerning these matters in state and federal legislative

forums. In 1993, PCFFA established the Institute for Fisheries Research, which studies and seeks to implement environmentally responsible fishing practices. PCFFA and its members have a direct interest in maintaining a healthy marine ecosystem through good stewardship of public fisheries. Throughout development of the IFQ Program, representatives of PCFFA provided oral and written comments and proposals which reflected these purposes of the organization. The IFQ Program directly and adversely affects PCFFA and its members by elevating economic returns to the bottom trawl fleet over conservation of public fishery resources, by excluding fishing-dependent communities and non-trawl sectors from participation in the program, by allowing conversion of quota shares in public fisheries into de facto private property, and by failing to provide full disclosure and analysis of adverse environmental effects – all contrary to requirements of the MSA and NEPA. These interests of PCFFA have been, and – unless the relief sought in this complaint is granted – will continue to be adversely affected and irreparably injured by the Defendants' implementation of the groundfish IFQ Program. PCFFA brings this action on behalf of itself, its member organizations, and their adversely affected members.

9. Plaintiff POORT is an Oregon non-profit corporation based in the southern Oregon town of Port Orford. POORT engages local fishing men and women and other community members in working toward the long-term sustainability of the Port Orford ocean ecosystem and the social and economic systems dependent on it. POORT is guided by a five-fisherman board of directors. POORT activities are focused on selective and sustainable fishing; reducing bycatch; avoiding marine habitat degradation; and marketing high quality, high value fish to consumers. Port Orford's fishing fleet has about 35 non-trawl vessels. Groundfish is approximately 31 percent of their landings, with the balance made up of crab, tuna, halibut, urchin, and salmon. About 30 percent of the town's labor force is employed in commercial fishing or marine-related businesses. POORT has developed a stewardship plan for nearby ocean and adjacent land. The plan seeks to protect marine resources while allowing sustainable uses to continue. In 2010, POORT received NOAA's Award of Excellence for Non-Governmental Organization of the Year. Throughout development of the IFQ Program,

representatives of POORT provided oral and written comments and proposals, objecting to provisions of the program that would effectively convert the fishery into private property, undermine POORT's efforts to maintain sustainable use of its fishing grounds, and leave its members with an uncertain future. POORT joined in requests for the Council to help offset the adverse impacts by adopting criteria for fishing communities to qualify for allocations under the program, as required by the MSA. The IFQ Program directly and adversely affects POORT by failing to consider effects of the program on Port Orford and nearby fishing grounds and by failing to include criteria to allow this fishing community and/or its fishing fleet to participate in fish allocations under the program. The IFQ Program further affects POORT directly and adversely by allowing trawl vessels, including those in nearby ports, to switch temporarily to fixed gear to catch their quota, regardless of adverse effects including competition for access to fishing grounds, depletion of targeted stocks, and undermining of established markets for Port Orford-landed fish. These deficiencies of the IFQ Program are all contrary to requirements of the MSA and NEPA. These interests of POORT have been and – unless the relief sought in this complaint is granted – will continue to be adversely affected and irreparably injured by Defendants' implementation of the groundfish IFQ Program. POORT brings this action on behalf of itself and its adversely affected board of directors and staff, and the fishing community whose interests they represent.

10. Plaintiff San Francisco Crab Boat Owners Association ("CBOA") is a California non-profit corporation based in San Francisco, California. CBOA was established in 1907 and is the oldest commercial fishing organization on the West Coast. The CBOA fleet is made up of approximately 35 family-owned boats under 50 feet. Historically CBOA boats focused on crab fishing, but for many years they have fished for rock fish, salmon, herring, halibut, and albacore, as well as crab. When fishing for rock fish (part of the groundfish complex covered by the Program), CBOA members use vertical hook and line, avoiding bycatch of non-targeted species and bringing in top quality fish that have a ready local market. In this way, the CBOA fishing men and women long have operated a sustainable, community-based fishery. Because of regulatory restrictions, stock rebuilding area closures, and competition from large visiting

boats, the CBOA boats' access to rockfish has declined, making it ever more important to maintain access to a full range of fisheries for now and in the future when rockfish stocks have rebuilt. During development of the IFQ Program, representatives of CBOA appeared before the Council and submitted written testimony objecting to the proposed long-term commitment of almost all of the groundfish fishery to the gear sector that bears principal responsibility for depletion of groundfish stocks, to the gifting and privatization of valuable interests in a public resource, and to the harsh impacts these actions by the Defendants would have on CBOA members and others in non-trawl sectors of the fishery, as well as on fish habitat and stock abundance. CBOA representatives sought guidance on how to establish a community fishing association that would qualify for an allocation of some of the groundfish quota. CBOA's requests went unanswered, but CBOA nevertheless helped establish the recently incorporated San Francisco Community Fishing Association in order to be prepared to receive quota under the IFQ Program. The Defendants' decision to implement the IFQ Program directly and adversely affects CBOA and its members through the long-term commitment of fishing power to the trawl sector with the resulting adverse impacts on fish habitat and abundance, increased competition from larger trawlers in a consolidated fleet, and curtailment of opportunity for CBOA members to maintain economically viable allocations of fish, while failing to provide full disclosure and analysis of the adverse environmental effects. These deficiencies of the IFQ Program are all contrary to requirements of the MSA and NEPA. These interests of CBOA have been and – unless the relief sought in this complaint is granted – will continue to be adversely affected and irreparably injured by Defendants' implementation of the groundfish IFQ Program. CBOA brings this action on behalf of itself and its adversely affected members.

11. Members of each of the Plaintiff organizations also use and enjoy the Pacific Ocean for activities other than commercial fishing, including recreational fishing, scuba diving, snorkeling, boating, swimming, research, and study, that depend on or are enhanced by an abundance of healthy marine life. Additionally, Plaintiffs' members live and work in communities whose long-term health and viability depend upon a successful commercial fishing sector. As a result of their activities, Plaintiffs' members receive economic,

recreational, and aesthetic benefits from the Pacific Ocean and Pacific groundfish. None of the claims asserted nor the relief requested herein requires the participation of individual members of the Plaintiff organizations. Each of the Plaintiffs has no adequate remedy at law for the injuries they suffer as a result of the Defendants' unlawful actions in approving and implementing the IFQ Program.

12. Defendant Gary Locke is Secretary of the United States Department of Commerce ("Secretary"). He is sued in his official capacity as the chief officer of the Department charged with overseeing the proper administration of the MSA.

13. Defendant National Marine Fisheries Service ("NMFS") is the federal agency that approved Amendments 20 and 21, promulgated a final rule partially implementing those amendments, and prepared and approved a final Environmental Impact Statement on each of those amendments.

14. Defendant National Oceanic and Atmospheric Administration ("NOAA") is an agency of the United States Department of Commerce with supervisory responsibility for NMFS. The Secretary of Commerce has delegated responsibility to ensure compliance with the MSA and NEPA to NOAA, which in turn has sub-delegated that responsibility to NMFS.

15. Defendants' actions challenged in this complaint are final, and the legal wrongs alleged herein are within the zone of interests protected by the MSA, APA and NEPA.

JURISDICTION AND VENUE AND INTRADISTRICT ASSIGNMENT

16. This court has jurisdiction over this action under 28 U.S.C. § 1331 (federal question); 28 U.S.C. §§ 2201-2202 (declaratory judgment); 16 U.S.C. §§ 1855 (f), and 1861 (d) (MSA); 5 U.S.C. §§ 701-706 (Administrative Procedure Act) ("APA"); and 42 U.S.C. § 4321 *et seq.* (NEPA).

17. Venue in this Court is proper under 28 U.S.C. § 1391(e). Plaintiffs PCFFA and CBOA are headquartered in San Francisco and many of the fishing men and women represented by these organizations reside in and fish offshore from the Northern District of California, including the San Francisco Division. Further, the Pacific Coast Groundfish

Fishery Management Plan (hereinafter "Groundfish FMP") regulates the fishing of groundfish in federal waters off the coasts of California, Oregon, and Washington, including the federal waters off the coast of the California counties of Del Norte, Humboldt, Mendocino, Marin, San Francisco, San Mateo, Sonoma, Monterey, and Santa Cruz.

MSA STATUTORY AND REGULATORY BACKGROUND

Statutory Background – Fishery Management Plans

18. The MSA establishes an elaborate system for conserving and managing fish populations and fisheries in United States territorial waters and the exclusive economic zone. The MSA creates eight regional fisheries management councils and charges them with preparing fishery management plans ("FMPs") for all managed fisheries. The Pacific Fishery Management Council ("Council") manages ocean fisheries off the coast of California, Oregon, and Washington.

19. Councils submit proposed FMPs and FMP amendments together with proposed implementing regulations to the Secretary for review and approval. 16 U.S.C. § 1854. The Secretary, acting through NMFS, must disapprove an FMP amendment to the extent it is inconsistent with provisions of the MSA or with any other applicable law. 16 U.S.C. § 1854 (a). The Secretary must disapprove proposed regulations to the extent they are inconsistent with the FMP, FMP amendment, the MSA, or other applicable law. 16 U.S.C. § 1854 (b).

20. Approvals of FMPs, FMP amendments, and implementing regulations are subject to the requirements of the NEPA, 42 U.S.C. § 4321 *et seq.*; 16 U.S.C. § 1854 (i).

Statutory Background – Individual Fishing Quotas

21. One measure for managing fisheries involves allocation of quotas in a fishery.

22. The MSA defines an "individual fishing quota" ("IFQ") as a Federal permit under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by a person. 16 U.S.C. § 1802 (23).

23. In 1996, Congress enacted the Sustainable Fisheries Act, extensively amending the MSA. See Pub. L. 104-297, 110 Stat. 3559 (1996). The act imposed a four-year moratorium on submittal of IFQ programs for Secretarial approval, in order to allow time for study of the controversial IFQ concept. § 303(d), 110 Stat. at 3576 (codified at 16 U.S.C. § 1853(d), repealed by Pub. L. 109-479, 121 Stat. 3575, 3586 (2007)).

24. In 2006, Congress further amended the MSA, authorizing councils to adopt "limited access privilege" ("LAP") programs, including IFQ programs. Pub. L. 109-479, § 303(a), codified as 16 U.S.C. § 1853a. The enactment stated requirements for LAP programs and provided for the Secretary to approve a program only if it meets the requirements. 16 U.S.C. § 1802 (27).

Statutory Background – Conservation of Fisheries Under the MSA

25. MSA requires any fishery management plan and any regulation promulgated to implement such a plan to be consistent with the National Standards set forth at 16 U.S.C. section 1851. These National Standards state principles, priorities, and requirements relating, *inter alia,* to conservation, resource utilization and allocation, use of scientific information, economic impacts, fairness, competition, efficiency, and fishing communities.

DEVELOPMENT AND APPROVAL OF FMP AMENDMENTS 20 AND 21, THE REGULATIONS, AND ENVIRONMENTAL IMPACT STATEMENTS

26. In or about 2003, the Council began considering amendment of the Groundfish FMP in order to "rationalize" the trawl gear sector of the fishery through imposition of a system of individual fishing quotas. The proposal was the subject of several Council meetings, input from Council subcommittees, written and oral testimony from interested agencies and persons, and a great deal of controversy. The resulting Groundfish FMP Amendment 20 establishes, *inter alia*, an IFQ Program for the shoreside trawl sector, and Amendment 21 allocates to that sector fixed quotas amounting to approximately 90 percent of the groundfish fishery resources.

27. The Council submitted Amendments 20 and 21 to the Secretary, and NMFS purported to partially approve those amendments by a letter dated August 9, 2010 and signed by the NMFS Regional Administrator for the Northwest Region. The Defendants prepared a draft EIS for Amendment 20, and another draft EIS for Amendment 21, invited comments on each, and reported in the October 1, 2010 Federal Register (75 Fed. Reg. 60893) that it had issued a record of decision for each amendment identifying the selected alternatives. The Council also submitted proposed regulations to the Secretary. A first set of proposed regulations was published in the Federal Register on June 10, 2010 (75 Fed. Reg. 32994), and a second set was published on August 31, 2010 (75 Fed. Reg. 53380). On October 1, 2010, Defendants promulgated a partial final rule (the "October 1 implementing regulations") which omitted some components necessary for lawful implementation of the program. (75 Fed. Reg. 60868).

28. As reflected in the foregoing documents, the stated objective of the IFQ Program is to increase net economic benefits to the trawl sector, create individual economic stability within the trawl sector, provide full utilization of the trawl sector allocation, consider environmental impacts, and achieve individual accountability of catch and bycatch. The quota shares are freely transferable, and program documents explain the expectation of rapid consolidation of fishing power within the trawl sector and rapid escalation of value for the quota shares.

29. The IFQ Program makes no direct provision concerning the non-trawl sectors of the fishery, but participants in those sectors will suffer adverse effects by, *inter alia*, the loss of opportunity to gain access to increased allocations; the harm to marine ecosystems and fisheries from continued damage by bottom trawling; the loss of incentive for development of less damaging gear; the de facto privatization of 90 percent of the groundfish fishery; the increased trawl fishing power in relation to non-trawl power; the program's gear-switching provision which allows trawlers to temporarily use fixed gear to catch their quota, thereby competing and depleting stocks on fixed-gear fishing grounds and disrupting markets for high quality fish caught by fixed gear; the impacts on mixed-gear fishing communities where fishing

infrastructure (such as processors and suppliers) disintegrates because the trawlers receive insufficient quota to remain in business or quota is sold out of port; and the failure of the Program to make provision for fishing communities in order to help offset these adverse impacts by receiving quota allocations, as required by law.

CLAIMS FOR RELIEF

FIRST CLAIM FOR RELIEF:

VIOLATIONS OF MSA RESTRICTIONS ON WHO CAN HOLD, USE, AND ACQUIRE QUOTA SHARES

30. Plaintiffs reallege and incorporate by reference each of the preceding paragraphs.

31. In Section 1853a (c) of the MSA Congress established requirements and limitations on who may hold, acquire, use, or receive an allowance of fishing quota. A council may authorize limited access privileges (LAPs, which includes IFQs) to be held, acquired, used by, or issued to only "persons who substantially participate in the fishery, including in a specific sector of such fishery, as specified by the Council." 16 U.S.C. § 1853a (c)(5)(E). "Person" is defined to include entities. 16 U.S.C.§ 1852 (36). In addition to substantially participating in the fishery, any person or entity acquiring a LAP must also be a United States citizen, corporation, partnership, or other entity established under federal or state law. 16 U.S.C. § 1853a (c)(1)(D). These restrictions also apply to any person that acquires a LAP for the purpose of perfecting or realizing on a security interest in the LAP. 16 U.S.C. § 1853a (c)(1)(D). A council must adopt transferability criteria consistent with section 1853a (c)(5)(E). 16 U.C.S. § 1853a (c)(7)(A).

32. Under section 1853a (a) of the MSA, the Secretary has authority to approve a LAP program only if it meets requirements of the section. The Secretary must disapprove an FMP amendment to the extent it is inconsistent with provisions of the MSA or with any other applicable law. 16 U.S.C. § 1854 (a). The Secretary must disapprove proposed regulations to the extent they are inconsistent with the FMP, FMP amendment, the MSA, or other applicable law. 16 U.S.C. § 1854 (a) and (b).

33. Amendments 20 and 21 and the implementing regulations do not comply with the statutory requirements and limitations on who may hold, acquire, use, or receive in transfer shares of quota in the Pacific groundfish fishery. Section 660.25(b)(2) of the regulations provides that any person or entity eligible to own and control a United States fishing vessel may hold, acquire, use, or receive in transfer quota shares. 50 C.F.R. § 660.25(b)(ii), 75 Fed. Reg. 32998. Under 46 U.S.C. section 12113, this is essentially anyone other than an entity with less than 75 percent United States ownership. Furthermore, the Groundfish FMP amendments and implementing regulations allow acquisition of quota share for purposes of perfecting or realizing on a security interest, in further contravention of 16 U.S.C. section 1853a (c)(1)(D).

34. These provisions of the IFQ Program violate the limitations of section 1853a (c)(5)(E) and effectively convert shares in public fishery resources into private property to be bought, sold, leased, and used as security, with the only restriction being at least partial involvement of United States citizens.

35. In approving the provisions of Amendments 20 and 21 on acquisition and use of quota share, and in approving and promulgating regulation 660.25(b)(2), the Defendants abused their discretion and acted arbitrarily and capriciously and in violation of their mandatory duties under 16 U.S.C. sections 1853a (a), 1854 (a) and (b), and in violation of section 706 (2) of the APA, 5 U.S.C. sections 701-706.

36. Defendants' violations of the MSA cause irreparable harm to Plaintiffs and damage their interest in maintaining their livelihood as fishing men and women and in good stewardship of marine ecosystems on which their fishing depends. They have no adequate remedy at law.

////

////

////

////

////

SECOND CLAIM FOR RELIEF:

FAILURE TO PROVIDE FOR FISHING COMMUNITIES AND NON-TRAWL SECTORS TO PARTICIPATE IN THE IFQ PROGRAM AND RECEIVE INITIAL ALLOCATIONS OF FISH

37. Plaintiffs reallege and incorporate by reference each of the preceding paragraphs.

38. Section 1853a(c)(3)(A) of the MSA, 16 U.S.C. section 1853a(c)(3)(A), states the requirements for fishing community participation in an IFQ program and specifies that such a fishing community is eligible to participate if it meets criteria developed by the Council and approved by the Secretary.

39. Section 1853a (c)(3)(B) of the MSA (16 U.S.C. § 1853a(c)(3)(B)), states factors that a council must consider in developing the participation criteria for eligible communities.

40. Section 1853a (c)(5) directs the Secretary, in developing a LAP program, to establish procedures: (A) to ensure fair and equitable initial allocations, including consideration of the current and historical participation of fishing communities; (B) to consider the basic cultural and social framework of the fishery, especially through the development of policies to promote the sustained participation of small owner-operated fishing vessels and fishing communities that depend on the fisheries; and (C) to include measures to assist fishing communities through set-asides of harvesting allocations, including providing privileges.

41. Under these provisions of the statute, the Defendants were required to develop criteria for participation of fishing communities in the IFQ Program, including in initial allocations under the program. The Defendants failed to carry out this duty or to otherwise make provision for fishing communities' timely participation in the Program, including in the initial allocations of quota shares. These arbitrary and unlawful omissions by the Defendants have denied fishing men and women and fishing-dependent business in small fishing communities the opportunity intended under the law for them to participate in the IFQ Program. Defendants' failure to carry out these duties has also deprived fishing communities of means to help mitigate adverse impacts the Program will have on many fishing communities.

42. Furthermore, Defendants arbitrarily and unlawfully failed to act in accordance with MSA Section 1853a (c)(5)(E), 16 U.S.C. § 1853a(c)(3)(E), by failing to include in the IFQ Program all substantial participants in the fishery, thereby denying the intended benefits of such a program to non-trawl participants in the Pacific groundfish fishery, including the members of fishing communities.

43. For the forgoing reasons, the Defendants' approvals of Amendments 20 and 21 and their implementing regulations were arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law in that they violate sections 1854 (a), 1854 (b), and 1853a(c) of the MSA (16 U.S.C. §§ 1854 (a), 1854 (b) and 1853a (c)), and Section 706 (2) of the APA, 5 U.S.C. §§ 701-706.

44. Defendants' violations of the MSA cause irreparable harm to Plaintiffs and the fishing communities they represent, damaging their interest in maintaining their livelihood as fishing men and women and in the well being of their communities. They have no adequate remedy at law.

THIRD CLAIM FOR RELIEF:

MSA VIOLATIONS BASED ON INCONSISTENCIES WITH THE MSA'S NATIONAL STANDARDS AND RELATED PROVISIONS OF LAW AUTHORIZING IFQ PROGRAMS

45. Plaintiffs reallege and incorporate by reference each of the preceding paragraphs.

46. Section 1851 (a) of the MSA sets forth National Standards for fishery conservation and management and requires that any FMP and any regulation to implement an FMP must be consistent with those standards. 16 U.S.C. § 1851 (a). The MSA provisions governing IFQ programs contain certain requirements that are closely related to several of the National Standards.

47. National Standard 1 requires the **prevention** of overfishing and Standard 9 requires the **prevention** of bycatch where practicable, while Standard 5 requires merely the **consideration** of efficiency in utilizing fishery resources. Defendants' IFQ Program inverts these priorities by adopting as its main purpose the achieving of efficiency in the trawl sector,

while merely considering conservation. The IFQ Program is thus inconsistent with Standards 1, 5, and 9.

48. The IFQ Program fails to carry out requirements of the IFQ-authorizing legislation that reflect the policies underlying National Standards 1, 5 and 9. An IFQ program is required to promote fishery conservation (16 U.S.C. § 1853a (c)(1)(C)(ii)), but this IFQ program does not do so. As shown by Defendants' statements of the IFQ Program's purposes, conservation was merely considered. An IFQ program is required to assist in rebuilding overfished stocks (16 U.S.C. § 1853a (c)(1)(A)), but this Program does not do so. Instead, the Program fails to promote fishery conservation and undermines the rebuilding of overfished stocks by allocating approximately 90 percent of the total allowable catch of Pacific groundfish to permittees who fish with trawl, the gear most damaging to fish habitat and most prone to bycatch. The Program also is required to monitor catch by using observers or electronic monitoring systems, which are to be financed by the permit holders (16 U.S.C. §§ 1853a (c)(1)(H) and (e)(2)), but the October 1 implementing regulations fail to include provisions to meet these requirements.

49. Under National Standard 4, allocations of fishing privileges must be fair and equitable to all fishermen, and under National Standard 5, no measure may have economic allocation as its sole purpose. The IFQ Program, in giving long-term, fixed fishery shares only to trawl permittees, while imposing new hardships on non-trawl participants and fishery-dependent communities, fails to meet the fair and equitable requirement. The economic allocation prohibition is also violated, as shown by Defendants' declarations that the main purpose of the Amendments 20 and 21 actions is to improve efficiency and profitability and facilitate better business planning for the trawl sector. In the same ways that National Standards 4 and 5 are violated, IFQ program requirements for a fair and equitable initial allocation of groundfish quota also are violated. 16 U.S.C. § 1853a(c)(5).

50. National Standard 2 requires management measures to be based on the best scientific information available. This requirement was violated by Defendants in singling out the trawl sector for an award of long-term, fixed shares in the fishery while ignoring the

abundant research and data demonstrating the adverse effects of bottom trawling on marine ecosystems and species.

51. Because of the inconsistency of Amendments 20 and 21 and the implementing regulations with National Standards 1, 2, 4, 5, and 9 and with the IFQ program requirements cited in the preceding paragraphs, Defendants were required to disapprove these proposals. 16 U.S.C. §§ 1854 (a), 1854 (b), and 1853a (a). Defendants' actions in approving the proposals were arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law.

52. Defendants' violations of the MSA cause irreparable harm to Plaintiffs and the communities and individuals they represent, damaging their interests in maintaining their livelihoods, in good stewardship of marine resources, and in the well being of their communities. They have no adequate remedy at law.

FOURTH CLAIM FOR RELIEF:

VIOLATIONS OF THE NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

53. Plaintiffs reallege and incorporate by reference each of the preceding paragraphs.

54. In approving fishery management actions for the Pacific groundfish fishery, Defendants are bound not only by the MSA, but also by the requirements of NEPA and the APA. NEPA requires Defendants to prepare a comprehensive EIS complying with all of the requirements of NEPA for any fishery management action that may significantly affect the human environment, including the FMP amendments and implementing regulations challenged in this litigation. 42 U.S.C. § 4321 *et. seq.*; 16 U.S.C. § 1854(i).

55. NEPA requires federal agencies to "consider every significant aspect of the environmental impact of a proposed action . . . [and] inform the public that it has indeed considered environmental concerns in its decisionmaking process." *Earth Island Inst. v. U.S. Forest Serv.*, 351 F.3d 1291, 1300 (9th Cir. 2003) (citation omitted). "[T]o accomplish this, NEPA imposes procedural requirements designed to force agencies to take a 'hard look' at environmental consequences." (*Id.*) and "provide a full and fair discussion of significant environmental impacts" for the public's review. 40 C.F.R. § 1502.1. NEPA review must be done "objectively and in good faith, not as an exercise in form over substance, and not as a

subterfuge designed to rationalize a decision already made." *Metcalf v. Daley*, 214 F.3d 1135, 1142 (9th Cir. 2000). NEPA regulations require an EIS to be "concise, clear, and to the point and . . . be supported by evidence that [the agency] has made the necessary environmental analyses." 40 C.F.R. §§1500.2; 1502.1.

56. The APA provides that courts shall "hold unlawful and set aside agency action, findings, and conclusions found to be arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law," 5 U.S.C. § 706(2)(A), which includes actions, findings and conclusions in violation of NEPA. *See* 16 U.S.C. § 1855(f).

57. NEPA regulations require that an EIS provide a statement of "the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action." 40 C.F.R. § 1502.13.

58. Contrary to this duty, in the EISs NMFS arbitrarily limited the scope of its proposal and applied an impermissibly narrow statement of purpose and need, which artificially limited the consideration of alternatives to those involving the fixed, long-term allocation of groundfishing rights to environmentally-damaging trawlers. (*E.g.*, Amendment 21 EIS at xii). This threshold statement of purpose and need arbitrarily truncated the analysis in the Amendment 20 and 21 EISs. By arbitrarily limiting the scope of its proposal and its statement of purpose and need to consideration of improved efficiency and profitability within the trawl sector, NMFS failed adequately to analyze or consider the environmental and other benefits of shifting a greater proportion of the allocation of groundfish to vessels that use less environmentally damaging types of gear. Non-trawl participants in the fishery, including the members of Plaintiffs' organizations, stand ready, willing and able to take on a much larger share of Pacific groundfish with gear and fishing practices significantly less damaging than bottom trawl fishing.

59. FMP Amendments 20 and 21 and the October 1, 2010 implementing regulations will disadvantage and weaken the non-trawl sectors and impair the ability of those participants in the fishery to take their allocations using environmentally superior techniques by, *inter alia*:

a. Making long-term, fixed proportional allocations of most of the Pacific Coast groundfish to trawlers, with those allocations being incorporated into FMP amendments that can only be changed through complex and time-consuming procedures;

b. Granting substantial economic value in the form of relatively stable, transferrable IFQs to trawlers, thereby giving them a significant competitive advantage over the non-trawlers without providing any such economic value or security to fixed gear and open access fishermen;

c. Allowing trawlers to switch intermittently to fixed gear without obtaining a fixed gear permit, while precluding the ability of fixed gear and open access participants to increase their fishing efforts without purchasing one or more of a very limited number of existing trawl permits;

d. Failing to adopt restrictions for trawler trips using fixed gear that would keep them from depleting fishing grounds used by the much smaller fixed gear and open access vessels;

e. Enabling trawlers, through intermittent gear-switching, to compete in fixed gear markets where the higher quality of fish caught by hook and line or trap brings higher prices, further weakening the non-trawl sectors; and

f. Pooling the groundfish allocations to the non-trawl and recreational fishing sectors, subject to bi-annual sub-allocations, thereby increasing the economic uncertainty for the non-trawl sectors and potentially reducing their actual shares below those assumed and analyzed in the EISs (*E.g.*, Amendment 21 FEIS at 11).

60. NEPA and its implementing regulations require federal agencies to study, develop and describe a reasonable range of alternatives that might avoid or mitigate a project's adverse environmental impacts. 42 U.S.C. § 4332(C)(iii), (E); 40 C.F.R. §§1502.14, 1500.2(e), 1508.9, 1502.16. An EIS must identify a reasonable range of alternatives to an agency's proposed action and present this information in a manner that "foster[s] both informed

decision-making and informed public participation." *'Ilio'Ulaokalani Coalition v. Rumsfeld*, 464 F.3d 1083, 1094 (9th Cir. 2006) (citation omitted); "[T]he alternatives analysis section is the heart of the [EIS]." *'Ilio'Ulaokalani*, 464 F.3d at 1095. "The existence of reasonable but unexamined alternatives renders an EIS inadequate." *Id.* (citation omitted). The NEPA regulations demand that the EIS "[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits." 40 C.F.R. § 1502.14(b). Furthermore, the EIS must provide "a clear basis for choice among the options." 40 C.F.R. § 1502.14.

61. Contrary to this duty, NMFS dismissed feasible alternatives as infeasible and failed to consider other viable alternatives adequately. Specifically, *inter alia*, NMFS:

a. Failed to set forth and analyze a reasonable range of alternatives that would have allowed NMFS and the public to evaluate feasible options for undertaking the groundfish fishery in a less environmentally damaging manner, and arbitrarily declined to set forth and analyze several such viable alternatives recommended by commenters (E.g,, Amendment 20 FEIS at 649-52);

b. Failed to set forth and analyze a reasonable range of alternatives that would have allowed NMFS and the public to evaluate the conservation and other environmental benefits of shifting a substantially greater proportion of the total Pacific groundfish harvest to participants who rely on fishing practices other than environmentally damaging bottom trawling, specifically the fixed gear and open access segments of the fishery;

c. Failed to set forth and analyze an alternative that did not involve the long-term fixed allocation of fishing rights to trawlers, despite NMFS's recognition that "such fixed allocations could be adopted and modified periodically through the biennial specifications process . . . ." (Amendment 20 FEIS at 87);

d. Failed to set forth and analyze an alternative that would allocate fishing privileges geographically and assign fishing privileges to adjacent communities and their fishing men and women, who could be anticipated to have greater stewardship values and fish in a more environmentally sustainable manner than more remote-based industrial-scale trawlers;

e. Failed to set forth and analyze an alternative that would have introduced incentives or requirements for bottom trawl licensees to transition into less damaging gear and fishing practices; and

f. Failed to set forth and analyze a true "no project" alternative;

62. NEPA regulations require that "proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement." 40 C.F.R. § 1502.4(a). The NEPA regulations likewise direct that "connected" actions be considered in the same NEPA document. 40 C.F.R. § 1508.25. Actions are "connected" as defined in the NEPA regulations if they, *inter alia*: "Are interdependent parts of a larger action and depend on the larger action for their justification." *Id.* at (a)(iii).

63. NMFS improperly segmented the environmental review by separating what should have been a single EIS into two EISs, on Amendments 20 and 21, respectively, despite the fact that these two amendments are parts of the same action and connected actions as defined in the NEPA regulations. This relationship of the Amendment 20 and 21 actions is evidenced, *inter alia*, by numerous statements in the EISs. *E.g.*, Amendment 20 FEIS at 87 ("The action alternatives for the trawl rationalization program are premised on the distribution of shares . . . .); Amendment 21 FEIS at 58 ("intersector allocation (Amendment 21) is needed to support Amendment 20 (trawl rationalization)." The relationship between Amendments 20 and 21 is further evidenced by the fact that the amendments were approved in a single action and the implementing regulations were likewise adopted in a single action. NMFS has also maintained a consolidated docket for the two actions at: http://www.regulations.gov/search/Regs/home.html#docketDetail?R=NOAA-NMFS-2010-0115

64. Based on this improper segmentation, NMFS understated the combined impacts of Amendments 20 and 21, impaired the ability of the agency and the public to evaluate, discuss and address the impacts of the combined actions, dismissed alternatives to the

combined actions such as establishing an IFQ for fixed gear or shifting quota from trawl to fixed gear and open access, and dismissed public comments on the basis that they were made on the wrong EIS (*E.g.*, Amendment 20 FEIS at 659, 660, 678 and 680; Amendment 21 FEIS at 193, 204).

65. NEPA regulations require that the EIS "describe the environment of the area(s) to be affected." 40 C.F.R. § 1502.15. In order to evaluate the environmental consequences of the project, an accurate understanding of its current environmental setting must be developed and presented. NEPA regulations also require that the EIS evaluate the environmental consequences of the alternatives, including discussions of direct and indirect effects and their significance, including cumulative impacts. 40 C.F.R. §§ 1502.16, 1508.7.

66. The EISs Defendants relied upon in approving Amendments 20 and 21 and the implementing regulations did not include adequate discussion and analysis of the environmental setting or environmental consequences of the Amendments. Specifically, *inter alia*, NMFS:

a. Failed to discuss or analyze, other than through brief conclusory statements, the environmentally damaging effects of bottom trawling as compared to the generally less environmentally damaging effects of non-trawl fishing (*E.g.*, Amendment 20 FEIS at 599);

b. Disregarded readily available information about the environmental damage caused by bottom trawling, which is known to be associated with the highest bycatch ratios and causes the greatest habitat damage of any gear;

c. Relied upon two previous EISs on FMP Amendments 18 and 19, respectively, which NMFS purported to incorporate by reference (*E.g.*, Amendment 20 FEIS at 215, 601, 675), without adequately summarizing the relevant contents of those EISs, in particular those contents documenting the environmentally damaging effects of bottom trawling and the generally less environmentally damaging effects of fixed gear and open access fishing;

d. Failed to discuss or analyze, other than through brief conclusory statements, the blight and other impacts in communities that have emphasized fixed gear and open access fishing, and the environmental effects of reducing or eliminating the ability of environmentally-preferable non-trawl gears to participate in the groundfish fishery, given the economic disadvantages being imposed on them. (*E.g.*, Amendment 20 FEIS at 597);

e. Failed to discuss or analyze the effects on several specific fishing communities that will be adversely effected, including but not limited to Port Orford;

f. Failed to discuss or analyze the environmental effects of the incentives being created for environmentally damaging trawling, including the economic incentives alleged above, the rewarding of high levels of trawl harvest during the catch share allocation period of 1994-2003 during which significant damage to rockfish populations occurred, the anticipated transfer of catch shares to entities that do not participate directly in the fishery and therefore are less likely to have stewardship values, and the costs of purchasing quota which will in turn increase the economic pressures to fish particularly if those purchases are debt funded;

g. Failed to discuss or analyze the environmental and other consequences of the "spillover" effect from the reallocation of fishing assets to other fisheries; and

h. Generally and repeatedly emphasized the few potential environmental benefits of its proposed actions while downplaying or disregarding the substantial adverse effects, in the process failing to take a "hard look" at those adverse effects.

67. NEPA regulations further require that, when an agency's evaluation of the effects of its proposed action depends on incomplete or unavailable information, the agency must at least: (1) state that such information is incomplete or unavailable; (2) state the relevance of the missing information to the agency's assessment of effects; (3) summarize existing credible scientific evidence that is relevant to evaluating those effects; and (4) evaluate those effects based upon theoretical approaches or scientific methods generally accepted in the scientific community. 40 C.F.R. § 1502.22(b). If the missing information is essential to a

reasoned choice among alternatives, and can be obtained without exorbitant costs, the agency must obtain and include that information in its NEPA analysis. *Id.* § 1502.22(a).

68. Defendants did not carry out their obligations regarding incomplete or unavailable information, in that NMFS, *inter alia:*

a. Failed to summarize existing credible scientific evidence or evaluate effects based upon approaches or methods generally accepted in the scientific community, in particular the scientific consensus regarding the environmentally damaging impacts of bottom trawling;

b. Rejected consideration of the available evidence based on extraneous factors not relevant to the evaluation of environmental effects, overstated the degree of uncertainty, and impermissibly attempted to shield the missing analysis behind a "complex array of spatial and temporal factors" (*E.g.*, Amendment 21 FEIS at 196-97); and

c. Failed generally to take a "hard look" at the available information demonstrating the relative environmental benefits of fixed gear and other non-trawl fishing.

69. NEPA regulations require that the agency "[a]t the time of its decision" prepare a concise public record of decision, which among other things must "State whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not." 40 C.F.R. § 1505.2(c). The NEPA regulations further define "mitigation" to include:

"(a) Avoiding the impact altogether by not taking a certain action or parts of an action.

(b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.

(c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.

(d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.

(e) Compensating for the impact by replacing or providing substitute resources or environments."

40 C.F.R. § 1508.20.

70. Contrary to this duty to adopt contemporaneous mitigation as defined in the NEPA regulations, NMFS failed to adopt available mitigation measures and relied, in part, upon measures that it has not yet adopted in order to avoid or minimize the environmental harms from the selected alternative. Specifically, NMFS impermissibly deferred mitigation, *inter alia*, by:

a. Relying upon the speculative future reallocation of effort by the trawl sector to fixed gear techniques in order to mitigate impacts;

b. Failing to adopt in the October 1, 2010, regulations a requirement for 100 percent observer monitoring of catch in the trawl sector, despite the fact that such a mitigation measure had been assumed in the EISs, instead separating that measure into a separate, pending, rulemaking that has not yet been completed;

c. Deferring consideration of an allocation of quota to community fishing associations;

d. Deferring the creation of distribution formulas or other features of the "adaptive management program" being relied upon to address many of the actions' adverse effects; and

e. Relying upon an open-ended "5-year program review" to address many of the actions' adverse effects.

71. NEPA regulations state that "[E]conomic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment." 40 C.F.R. § 1508.14. The NEPA regulations also state that "Environmental impact statements shall be analytic rather than encyclopedic." 40

C.F.R. § 1502.2. The NEPA regulations also direct that "Impacts shall be discussed in proportion to their significance." *Id.*

72. Contrary to this duty, NMFS substantially failed to address the relationship of the economic and social effects of its actions on the natural and physical environmental effects. In particular, the EISs failed to address how the economic and social impacts created by NMFS' actions on non-trawl fishing businesses and the communities that support them will relate to, and result in, increased impacts to marine species and ecosystems.

73. For each of the foregoing reasons, NMFS's FEISs on FMP Amendments 20 and 21 violate NEPA, and Defendants' approvals of FMP Amendments 20 and 21 and promulgation of the associated regulations were arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law.

74. Defendants' violations of the NEPA cause irreparable harm to Plaintiffs and the fishing communities they represent, damaging their interests in informed participation, in maintaining their livelihood as fishing men and women and in the well being of their communities. They have no adequate remedy at law.

PRAYER FOR RELIEF

WHEREFORE, the Plaintiffs respectfully request this Court to enter the following relief:

75. Enter a declaratory judgment that the Defendants' approvals of Amendments 20 and 21 and the implementing regulations promulgated October 1, 2010, violated the MSA;

76. Enter a declaratory judgment that the Defendants' approvals of Amendments 20 and 21 and the implementing regulations promulgated October 1, 2010, violated the APA;

77. Enter a declaratory judgment that the Defendants' approvals of Amendments 20 and 21 and the implementing regulations promulgated October 1, 2010, violated NEPA;

78. Issue an injunction invalidating Defendants' approvals of Amendments 20 and 21 and the implementing regulations of October 1, 2010;

79. Issue an injunction setting aside the two EISs on Amendments 20 and 21;

80. Remand to Defendants for further proceedings consistent with the requirements of the MSA, APA, and NEPA;

81. Award Plaintiffs their fees, expenses, and costs pursuant to the Equal Access to Justice Act, 28 U.S.C. § 2412 (d);

82. Expedite the matter and schedule a hearing on the merits as soon as is practicable pursuant to 16 U.S.C. § 1855(f)(4); and

83. Grant Plaintiffs such further relief as may be appropriate.

DATED: October 22, 2010

Plaintiffs Pacific Coast Federation of Fishermen's Associations, Port Orford Ocean Resource Team, and San Francisco Crab Boat Owners Association

By their attorneys,

CHAPMAN POPIK & WHITE LLP

Mark A. White
Andrea Kendrick

Mary L. Hudson
LAW OFFICE OF MARY L. HUDSON

Alan Waltner
LAW OFFICES OF ALAN WALTNER

James P. Walsh (CA State Bar No. 184620)
Gwen Fanger (CA State Bar No. 191161)
DAVIS WRIGHT TREMAINE LLP
505 Montgomery Street, Suite 800
San Francisco, California 94111
Telephone: (415) 276-6500
Facsimile: (415) 276-6599
Email: budwalsh@dwt.com
gwenfanger@dwt.com

ORIGINAL FILED
2010 OCT 25 P 3:33
RICHARD W. WIEKING
CLERK, U.S. DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

E-filing

Attorneys for Plaintiffs
PACIFIC DAWN LLC, CHELLISSA LLC, JAMES and SANDRA SCHONES, DA YANG SEAFOOD INC. and JESSIE'S ILWACO FISH COMPANY

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

SAN FRANCISCO DIVISION

BZ

PACIFIC DAWN LLC, CHELLISSA LLC, JAMES AND SANDRA SCHONES, DA YANG SEAFOOD INC., and JESSIE'S ILWACO FISH COMPANY,

Plaintiffs,

v.

GARY LOCKE, Secretary of Commerce, in his official capacity as Secretary of the United States, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, and NATIONAL MARINE FISHERIES SERVICE,

Defendants.

Case No. CV 10 4829

COMPLAINT FOR DECLARATORY AND INJUNCTIVE RELIEF

INTRODUCTION

1. This case challenges portions of fishery management regulations issued by the Secretary of Commerce, acting through the National Oceanic and Atmospheric Administration ("NOAA"), on October 1, 2010 that established a completely new fishery management program based on allocation of individual fishing quotas ("IFQs") for the Pacific Coast Groundfish

Fishery, including the Pacific whiting fishery, to particular harvesting vessels and processing plants. This new program is also referred to as the Trawl Rationalization Program. The regulations at issue (the "IFQ Regulations") were promulgated pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. § 1081, et seq. (Magnuson-Stevens Act).

2. Plaintiffs, fishing and processing entities with recent history of participating in the Pacific whiting fishery, are challenging determinations in the final rule with respect to their initial IFQ allocations. The IFQ Regulations make fixed allocations awarding a fishery participant a limited quantity of fish that that participant may then harvest in a fishing season, based on its relative fishing and/or processing history. A participant must possess the proper permits from the National Marine Fisheries Service ("NMFS") to harvest the fish and may not obtain any more Pacific whiting than that allowed under an IFQ Permit and allocation, and annual fishing harvest limits.

3. Plaintiffs submit that NOAA has failed to satisfy the requirement in the Magnuson-Stevens Act that IFQ allocations must give consideration to recent fishing activity of harvesting vessels and processing history for processing facilities and otherwise be consistent with the requirements of the Magnuson-Stevens Act. Instead, the IFQ Regulations favor those with fishing history in the period 1994 to 2003 and those with processing history from 1998 to 2004, determinations that, inter alia, arbitrarily do not recognize, or give consideration for, recent fishing or processing history and the attendant investment commitment to the fishery. As a result, the IFQ Regulations with respect to the initial allocation of Pacific whiting IFQ violate the Magnuson-Stevens Act and the Administrative Procedure Act (APA), 5 U.S.C. § 706.

4. The IFQ Regulations also do not recognize and credit "B" permit trawl fishing history in making an initial allocation of IFQ to Pacific Dawn LLC also in violation of the Magnuson-Stevens Act and the APA.

JURISDICTION, VENUE AND INTRADISTRICT ASSIGNMENT

5. This Court has jurisdiction pursuant to 28 U.S.C. § 1331 (federal question), 28 U.S.C. § 2201-2202 (declaratory judgment); 16 U.S.C. §§ 1855(f), 1861(d) (Magnuson-Stevens Act); and 5 U.S.C. § 701-706 (APA).

6. Venue is proper in this Court pursuant to 28 U.S.C. § 1391(e).

7. The Pacific Groundfish Fishery that is the subject of this case is prosecuted along the coasts of Oregon, Washington, and California.

PARTIES

8. Plaintiff Pacific Dawn LLC ("Pacific Dawn") is a company based in Seattle, Washington which operates the fishing vessel Pacific Challenger and, in addition, holds the fishing history of the fishing vessel Amber Dawn. Pacific Dawn currently holds permits for fishing for Pacific Groundfish, including whiting, and is otherwise eligible to receive IFQ under the Trawl Rationalization Program. Pacific Dawn has been informed by NMFS that it will receive IFQ initial allocations upon application for a new permit under the Trawl Rationalization Program. However, NMFS has determined, as part of the final rule issued on October 1, 2010, that it will not recognize or give credit to Pacific Dawn in calculating its initial IFQ share for the fishing history of the Amber Dawn on the basis that it was earned under a fishing permit with a "B" endorsement rather than an "A" endorsement. In addition, the final rule does not recognize the recent fishing history held by Pacific Dawn from 2003 to the present in calculating its initial IFQ allocation and otherwise treats Pacific Dawn unfairly and unlawfully under the IFQ Regulations.

9. Plaintiff Chellissa LLC ("Chellissa") owns the fishing vessel Chellissa and is based in Florence, Oregon. Chellissa currently holds permits for fishing for Pacific Groundfish, including whiting, and is otherwise eligible to receive IFQ under the Trawl Rationalization Program. The final rule fails to recognize the recent fishing history held by Chellissa from 2003 to the present in calculating its initial IFQ allocation and otherwise treats Chellissa unfairly and

unlawfully under the IFQ Regulations.

10. Plaintiffs James and Sandra Schones own and operated the fishing vessel Collier Brothers in the Pacific whiting fishery. James and Sandra Schones currently hold a permit for fishing for Pacific Groundfish, including whiting, and are otherwise eligible to receive an initial IFQ allocation under the Trawl Rationalization Program. The final rule fails to recognize the recent fishing history held by James and Sandra Shones from 2003 to the present in calculating its initial IFQ allocation and otherwise treats James and Sandra Schones unfairly and unlawfully under the IFQ Regulations.

11. Plaintiff Da Yang Seafood Inc. ("Da Yang") is a fish processing firm based in Astoria, Oregon. Da Yang started purchasing Pacific whiting after 2004. However, the final rule denies Da Yang any initial IFQ allocation of Pacific whiting and refuses to recognize the company's recent history of processing Pacific whiting and otherwise treats Da Yang unfairly and unlawfully under the IFQ Regulations.

12. Plaintiff Jessie's Ilwaco Fish Company ("Ilwaco Fish") is a fish processing firm based in Ilwaco, Washington that has purchased and processed Pacific whiting since 1976. Its plant is located in a small fishing community on the Washington Coast and it employs approximately 100-300 workers in its operations each year. Ilwaco Fish holds the appropriate permits to receive a share of the initial issuance of whiting quota share to be issued to qualified shoreside processors, which has been set at 20 percent of the overall quota share available. However, Ilwaco Fish's processor quota share will not reflect its recent history of processing after 2004 to the present, including 14 million pounds in 2005, 19 million pounds in 2006, and 10 million pounds in 2007. As a consequence, Ilwaco Fish will be forced to forgo market share it has built up in the Pacific whiting fishery over recent years and its quota share will be much less than if its recent history were recognized. The final rule denies Ilwaco Fish its rightful initial IFQ allocation of Pacific whiting, refuses to recognize the company's recent history of processing Pacific whiting and otherwise treats Ilwaco Fish unfairly and unlawfully under the IFQ

Regulations.

13. Defendant Gary Locke, the Secretary of the U.S. Department of Commerce, is responsible under the Magnuson-Stevens Act for approving fishery management plans and promulgating fishery management regulations, including the Trawl Rationalization Program, pursuant to the Magnuson-Stevens Act. Secretary Locke is sued in his official capacity.

14. Defendant National Oceanic and Atmospheric Administration (NOAA) is a subunit of the U.S. Department of Commerce with supervisory responsibility for NMFS. The Secretary of Commerce has delegated certain administrative functions under the Magnuson-Stevens Act to NOAA, which in turn has sub-delegated certain fishery management functions to NMFS.

15. Defendant NMFS is the federal agency that administers the fishery management plan for the Pacific Coast Groundfish Fishery, of which the Trawl Rationalization Program is now a part, and is a subunit of NOAA and the U.S. Department of Commerce.

16. Secretary Locke, NOAA and NMFS have approved Amendments 20 and 21 to the Pacific Coast Groundfish Fishery Management Plan (FMP) that comprises in substantial part the Trawl Rationalization Program and issued final regulations implementing those Amendments in the Federal Register on October 1, 2010. 75 Fed. Reg. 60868-60999 (Oct.1, 2010).

LEGAL AND FACTUAL BACKGROUND

17. The Magnuson-Stevens Act created a national fishery management system for fish resources and fishing activity located in a 200-nautical mile Exclusive Economic Zone along the U.S. coast, including California, Oregon and Washington.

18. Pursuant to that national fishery management system, the responsible federal agencies, NOAA and NMFS, acting upon recommendations of the Pacific Fishery Management Council created to provide for "bottom-up" fishery management plans for various groups of marine fisheries, long ago adopted the Pacific Coast Groundfish FMP. Approximately 90 species of groundfish, including whiting, are managed pursuant to the FMP through a number of measures, including annual harvest limits, trip and landing limits, no-fishing areas, seasonal

closures, and gear restrictions. New entrants into the fisheries are limited and the size of the trawl fleet has declined by nearly 50 percent over the last decade. The Pacific Coast Groundfish Fishery is one of the most strictly regulated fisheries in the world, and overall is considered one of the healthiest by recent peer-reviewed scientific analysis.

19. Upon approval of the FMP by NOAA and NMFS, acting for the Secretary of Commerce, regulations were promulgated to implement the FMP, which is amended and updated on a regular basis as environmental and economic conditions change. Further, the FMP is updated and amended at least bi-annually but sometimes every quarter-year or monthly when appropriate. The goal is to conserve the various fisheries subject to the FMP to ensure the long-term conservation of fish stocks while taking into account the impacts of the FMP on fishing communities, individuals and companies that depend on the fisheries.

20. On October 1, 2010, NOAA published a final rule implementing Amendments 20 and 21 to the FMP. Amendment 20 establishes a Trawl Rationalization Program that consists of an IFQ program for the shorebased trawl fleet and cooperative programs, for the at-sea mothership and catcher/processors trawl fleets. The Trawl Rationalization Program is intended to increase net economic benefits, create individual economic stability, provide full utilization of the trawl sector allocation, consider environmental impacts, and achieve individual accountability of catch and bycatch. Amendment 21 establishes fixed allocations of quotas for limited entry trawl participants.

21. The final rule contains standards and procedures for issuance of IFQ permits and initial allocations of IFQ (based on a catch history possessed by current permit holders), among other provisions. The allocation formulas contained in Amendment 20 and implemented by the final rule are based on vessel landings for the trawl vessel sector or processor receipt history for the shoreside sector. For plaintiffs, each is expected to receive an initial allocation of IFQ that will cause them to reduce their operations, leading to a reduction in the market share each has recently developed.

22. The final rule allocates 80 percent of the Pacific whiting IFQ to current vessel permit holders and 20 percent of the shoreside harvest allocation to shoreside processors.

23. With respect to vessel permits, the final rule states the following (75 Fed. Reg. at 60959): "Whiting QS [quota share] based on each limited entry trawl permit's history will be allocated based on the permit's relative history from 1994 to 2003." History after 2003 was not considered important or relevant, and was rejected as a basis for allocation.

24. With respect to shoreside processors, the final rule states the following: (75 Fed. Reg. at 60960): "For each eligible shoreside processor, whiting QS [quota share] will be allocated based on the eligible shoreside processor's relative history from 1998 through 2004." History after 2004 was not considered important or relevant, and was rejected as a basis for allocation.

25. All fishery management plans and regulations implementing such plans must comply with the requirements of Magnuson-Stevens Act in order to be binding and effective. Any such regulations that are not so consistent are unenforceable.

26. The Administrative Procedure Act, 5 U.S.C. § 706(2), authorizes a federal court to hold unlawful and set aside agency actions, findings, and conclusions found to be arbitrary, capricious, an abuse of discretion, and otherwise not in accordance with law.

27. The Pacific whiting fishery is one of the most important commercial fisheries, and the largest, off the Pacific Coast and is found in Oregon, Washington, and California. Recent harvest levels have been within the annual conservation guidelines set by NOAA and NMFS and the stock is not considered overfished. In fact, the independent Marine Stewardship Council in 2009 certified the Pacific whiting fishery as sustainable and well-managed.

CAUSES OF ACTION

FIRST CAUSE OF ACTION

(Violation of Magnuson-Stevens Act in failing to properly consider and credit fishing history after 2003 for Pacific whiting trawl vessels)

28. Plaintiffs incorporate by reference all preceding paragraphs.

29. The Magnuson-Stevens Act contains a number of requirements for adopting FMPs and implementing regulations to carry out FMPs, including, inter alia, the requirement of considering both recent harvests and historic harvests, basing determinations on the best available information, considering the impacts on local fishing communities, and making allocations fair and equitable to all fishermen, among other required considerations.

30. By failing to consider and credit recent fishing history for trawl vessels after 2003 in the Pacific whiting fishery, the final rule creating the Trawl Rationalization Program violated the Magnuson-Stevens Act.

SECOND CAUSE OF ACTION
(Violation of Magnuson-Stevens Acts for failing to properly consider and credit recent processing history after 2004 for whiting shoreside processors)

31. Plaintiffs incorporate by reference all preceding paragraphs.

32. The Magnuson-Stevens Act contains a number of requirements for adopting FMPs and implementing regulations to carry out FMPs, including, inter alia, the requirement of considering both recent harvests and historic harvests, basing determinations on the best available information, considering the impacts on local fishing communities, and making allocations fair and equitable to all fishermen among other required considerations.

33. By failing to consider and credit recent fish receipts for shoreside processors in the Pacific whiting fishery after 2004, the final rule creating the Trawl Rationalization Program violated the Magnuson-Stevens Act.

THIRD CAUSE OF ACTION
(Violation of Magnuson-Stevens Acts for refusing to properly consider and credit fishing history associated with "B" permits)

34. Plaintiffs incorporate by reference all preceding paragraphs.

35. The Magnuson-Stevens Act contains a number of requirements for adopting FMPs and implementing regulations to carry out FMPs, including, inter alia, the requirement of considering both recent harvests and historic harvests, basing determinations on the best available

information, considering impacts on local communities, and making allocations fair and equitable to all fishermen among other required considerations.

36. By failing to consider and credit fishing history for "B" trawl permits in the Pacific whiting, the final rule creating the Trawl Rationalization Program violated the Magnuson-Stevens Act.

FOURTH CAUSE OF ACTION

(Violation of the APA)

37. Plaintiffs incorporate by reference all preceding paragraphs.

38. The final rule with respect to the treatment of prior history for trawl vessels and shoreside processors and for treatment of fishing history for "B" permits violates the Magnuson Stevens Act and is arbitrary and capricious, an abuse of discretion, and otherwise not in accordance with law.

39. The final rule therefore violates the APA.

PRAYER FOR RELIEF

Wherefore, Plaintiffs request that the Court:

1. Enter a declaratory judgment that Defendants, in the Final Rule, violated the Magnuson-Stevens Act and the APA for unlawfully failing to consider and credit Pacific whiting trawl fishing history after 2003 in making initial allocations of IFQ and to fairly and lawfully consider the history and circumstances of each Plaintiff;

2. Enter a declaratory judgment that Defendants, in the Final Rule, violated the Magnuson-Stevens Act and the APA for unlawfully failing to consider and credit Pacific whiting processing history after 2004 in making initial allocations of IFQ and to otherwise treat Plaintiffs fairly and lawfully;

3. Enter a declaratory judgment that Defendants, in the Final Rule, violated the Magnuson-Stevens Act and the APA for unlawfully failing to consider and credit limited trawl permit "B" history in making initial allocations of IFQ and to otherwise treaty Plaintiffs fairly and

lawfully;

4. Remand the Final Rule for proceedings and action consistent with the Magnuson-Steven Act and the APA;

5. Award plaintiffs their fees, expenses and costs pursuant to the Equal Access to Justice Act, 28 U.S.C. § 2412;

6. Provide such other relief as is just and proper.

/

/

/

/

DATED: October 25, 2010

Respectfully submitted,

DAVIS WRIGHT TREMAINE LLP

By: James P. Walsh by TRA

James P. Walsh
Attorneys for Plaintiffs
Pacific Dawn LLC, Chellissa LLC, James and Sandra Schones, Da Yang Seafood Inc., and Jessie's Ilwaco Fish Company

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

NOAA CATCH SHARE POLICY

EXECUTIVE SUMMARY

PURPOSE

President Obama is committed to creating an integrated and comprehensive national ocean policy, incorporating ecosystem-based science and management, and emphasizing transparency and participation in our public stewardship responsibilities. The Department of Commerce's and NOAA's role in this framework is to conduct and use outstanding science to seek policy and management outcomes that support healthy and resilient coastal economies and ecosystems and foster innovation. Sustainable fisheries are an essential component of that commitment, and catch share programs are proving to be powerful tools to manage fisheries sustainably and improve their economic performance.

The purpose of this policy is to encourage well-designed catch share programs to help maintain or rebuild fisheries, and sustain fishermen, communities and vibrant working waterfronts, including the cultural and resource access traditions that have been part of this country since its founding.

DEFINITION

"Catch share" is a general term for several fishery management strategies that allocate a specific portion of the total allowable fishery catch to individuals, cooperatives, communities, or other entities. Each recipient of a catch share is directly accountable to stop fishing when its exclusive allocation is reached. The term includes specific programs defined in law such as "limited access privilege" (LAP) and "individual fishing quota" (IFQ) programs, and other exclusive allocative measures such as Territorial Use Rights Fisheries (TURFs) that grant an exclusive privilege to fish in a geographically designated fishing ground.

CONTEXT

Commercial and recreational fisheries result in $162.9 billion in sales impacts in the U.S. economy each year[1]. However, a number of U.S. fisheries are under-performing biologically and economically and require consideration of additional tools to improve management effectiveness. For example, the present productivity of U.S. fishery resources is 24 percent below the long term sustainable yield of 12.4 million tons.[2] Rebuilding and effectively managing these resources could significantly increase annual commercial dockside revenues and provide additional access, fishing opportunities and satisfaction to millions more recreational anglers than at present. Given the challenges facing U.S. fishery managers, both best available science and practical experience support the conclusion that it is in the public interest to encourage and support the evaluation of catch share programs authorized under the Magnuson-Stevens Fishery Conservation and Management Act (MSA)[3]. In addition, Congress, in its 2006 amendments to

[1] NMFS, 2010. Fisheries Economics of the U.S., 2008. NOAA Tech Memo NMFS-F/SPO-109, 177 p.
[2] NMFS, 2009 Our living oceans: Report on the status of U.S. living marine resources, 6th edition. NOAA Tech Memo NMFS-F/SPO-80, 369 p.
[3] The MSA authorizes limited access privilege and individual fishing quota programs at 16 U.S.C. 1853(a).

the MSA[4], and national experts[5, 6] have recognized catch shares are a tool that should be available for use in any fishery, subject to general guidelines for their design.

Catch share programs have been used in U.S. federal fisheries since 1990 and now include 14 different programs from Alaska to Florida managed by six different Councils. Both here and in other countries catch shares programs demonstrate they can effectively achieve annual catch limits, reduce the negative biological and economic impacts of the race for fish, and when properly designed can eliminate overfishing and result in safer and more profitable fisheries while also addressing other social objectives. This policy provides a foundation for facilitating the wide-spread consideration of catch share fishery management plans (FMPs) while enabling local fishermen and communities to be part of the process.

GOALS

NOAA's goals for this policy are: to help reduce administrative or organizational impediments to the consideration and adoption of catch shares in appropriate fisheries; to inform and educate stakeholders of the different options and capabilities of catch share programs; and to help organize collaborative efforts with interested Councils, states, communities, fishermen and other fishery stakeholders on the design and implementation of catch share programs.

Catch shares may not be the best management option for every fishery or sector[7]. NOAA will not require the use of catch shares in any particular fishery or sector, but it will promote and encourage the careful consideration of catch shares as a means to achieve the conservation, social and economic goals of sustainable fishery management. To do so, NOAA is issuing this policy and guiding principles to ensure their success. NOAA will seek the program support required to assist in the design, transition period and operation of catch share management. In return, catch share programs can help transform fisheries and ensure fisheries are a prosperous and sustainable element of a national strategy for healthy and resilient ecosystems for present and future generations.

NOAA'S CATCH SHARE POLICY

To achieve long-term ecological and economic sustainability of the Nation's fishery resources and fishing communities, NOAA encourages the consideration and adoption of catch shares wherever appropriate in fishery management and ecosystem plans and their amendments, and will support the design, implementation, and monitoring of catch share programs.

---

[4] Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, Pub. L. 109-479.

[5] U.S. Commission on Ocean Policy, 2004. An ocean blueprint for the 21st Century. Final Report Recommendation 19-15 says in part "Every federal, interstate and state fishery management entity should consider the potential benefits of adopting such [dedicated access privilege] programs."

[6] National Academy of Sciences, 1999. Sharing the fish: Toward a national policy on individual fishing quotas. Committee to review individual fishing quotas, Ocean Studies Board, National Research Council, Washington, DC states that "IFQs can be used to address any number of social, economic and biologic issues in fisheries management. Alternative management approaches can achieve some, but not all, of the objectives that can be achieved with IFQs….Although the IFQ is no panacea, it deserves a place in the array of techniques that may be needed in any particular fishery management plan."

[7] A sector is defined here as a distinct subset of fishery participants who share similar characteristics, such as a group of commercial, recreational or subsistence fishermen and, unless further qualified, includes the allied shore-side entities they engage with. It does not equate to the use of the regulatory term sector or "sector allocation" in the New England Council groundfish management plan.

CATCH SHARE GUIDING PRINCIPLES

The MSA sets forth a number of criteria for consideration in the design and implementation of catch share programs. Councils and NOAA must follow these MSA requirements. In addition, NOAA recommends adopting the following guiding principles to ensure the best possible catch share design and program outcomes.

Specific management goals: All fishery management programs, including catch shares, should identify specific measurable goals for management.

Allocations: For all fishery management programs, including catch shares, the underlying harvest allocations to specific fishery sectors (e.g., commercial and recreational) should be revisited on a regular basis, and the basis for the allocation should include consideration of conservation, economic, and social criteria used in specifying optimum yield and in furtherance of the goals of the underlying FMP.

Transferability: Councils should thoroughly assess the net benefits of catch share transferability, including allowing inter-sector transfers to both promote future access opportunities and contribute to conservation and management goals.

Distinctions Among Sectors: No fishery or sector (e.g., commercial, recreational or subsistence) is required by the policy to adopt catch shares. Councils should consider the appropriateness of catch share programs and decide which, if any, sectors may benefit from their use. NOAA will support the design and implementation of catch share programs for the commercial and recreational charter and head boat sectors as appropriate, but does not advocate the use of individual private angler catch shares. However, NOAA will support Councils in the identification and application of innovative management measures that both promote recreational fishing access and foster sustainable fisheries.

Duration: The duration of every catch share program should be explicitly defined.

Fishing Community Sustainability: Councils should develop policies to engage with and promote the sustained participation of fishing communities and take advantage of the recently added community provisions in the MSA. NOAA will work in partnership with Councils, other federal agencies and coastal states to promote sustainable fishing communities, resource access and co-management principles, including the use of Fishing Community and Regional Fishing Association provisions of the MSA, and build fishing community capacity to develop and utilize permit banks and other sustainability tools.

Royalties: NOAA will assist Councils if and when they determine that it is in the public interest to collect royalties for the initial or subsequent allocations in a limited access privilege program.

Cost Recovery: Incremental government costs for management, data collection and analysis, and enforcement of limited access privilege programs shall be recovered from participants as required by the MSA.

Review Process: Councils should periodically review all catch share and non-catch share programs to ensure that management goals are specified, measurable, tracked and used to gauge whether a program is meeting its goals and objectives.

CATCH SHARE PROGRAM SUPPORT

Because of the effectiveness, flexibility and the potential applicability of catch shares to many fisheries, NOAA will provide leadership, technical advice, and other support for the consideration and use of catch share programs. To achieve this end, NOAA will collaborate with its many federal, state and constituency partners to support catch share programs in the following four categories:

1. **Reduce technical and administrative impediments to designing and implementing catch share programs.** NOAA will assist Councils and stakeholders that want to consider catch share programs with technical advice and administrative support to help them design and implement a catch share program, while empowering local fishermen to be part of the process. This includes assisting in research, economic analysis and evaluation of catch share applicability for their particular fishery, resolving outstanding questions on application of the MSA and other legal requirements to their proposed design, and organizing a common infrastructure and enforcement protocols where appropriate to minimize program costs and promote "best practices."

2. **Provide expertise and related support to assist development of new catch share programs.** NOAA will provide expertise and work with Councils, interested stakeholder organizations, and other partners to adopt and implement catch share programs that are cost effective and meet the Councils' objectives. This includes providing analytical capacity through staff details and access to external experts, providing analysis of the impact of alternative allocation and transfer options between sectors, providing tools for assisting fishermen to explore options and evaluate impacts of management alternatives, and facilitating access to other government and private sector programs to support the design and implementation of a catch share option.

3. **Inform and educate stakeholders so that they can best participate in the design and implementation of catch share programs.** NOAA will work with Councils, states and other partners to provide information and training to raise awareness and increase understanding about the advantages and disadvantages of catch share programs; to improve general catch share literacy in communities, including fishermen, regulators and the public; and to increase stakeholder engagement in the development and review of catch shares.

4. **Coordinate data collection, research and performance monitoring of catch share programs.** NOAA will partner with Councils, states, Interstate Commissions and other collaborators to ensure appropriate monitoring data are collected, relevant research is conducted, and catch share performance metrics are derived to support the consideration, adoption, operation and evaluation of catch share programs.

CATCH SHARE POLICY IMPLEMENTATION

Starting with FY 2011, an annual plan to implement the NOAA Catch Share Policy will be developed in association with NOAA's fiscal year budget appropriation. Based on approved spending levels, the plan will include the specific actions that NOAA believes will ensure catch share programs have the highest likelihood of success.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
UNITED STATES DEPARTMENT OF COMMERCE

NOAA CATCH SHARE POLICY

BACKGROUND AND LEGAL AUTHORITY

President Obama is committed to creating an integrated and comprehensive national ocean policy, incorporating ecosystem-based science and management, and emphasizing transparency and participation in our public stewardship responsibilities. The Department of Commerce's and NOAA's role in this framework is to conduct and use outstanding science to seek policy and management outcomes that support healthy and resilient ecosystems and economies and foster innovation. Sustainable fisheries are an essential component of that commitment, and catch share programs have proven to be powerful tools to manage fisheries sustainably and improve their economic performance

The purpose of this policy is to encourage well-designed catch share programs to help rebuild fisheries and sustain fishermen, communities and vibrant working waterfronts, including the cultural and resource access traditions that have been part of this country since its founding.

Catch shares designed for federal fisheries are authorized by the Magnuson-Stevens Fishery Conservation and Management Act (MSA).[8] The original MSA was signed into law in 1976. The results of more than three decades of management under MSA represent a significant accomplishment. Commercial and recreational fisheries result in $162.9 billion in sales impacts in the U.S. economy each year[9]. However, a number of U.S. fisheries are under-performing biologically and economically and require consideration of additional tools to improve management effectiveness. For example, the present productivity of U.S. fishery resources is 24 percent below the long term sustainable yield of 12.4 million tons.[10] Rebuilding and effectively managing these resources could significantly increase annual commercial dockside revenues and provide additional access, fishing opportunities and satisfaction to millions more recreational anglers than at present The policy articulated in this document provides a foundation for facilitating the wide-spread consideration of catch share fishery management plans to help accomplish this improvement while enabling local fishermen and communities to be part of the process.

NOAA's goals for this policy are: to help reduce any administrative or organizational impediments to the consideration and adoption of catch shares in appropriate fisheries; to inform and educate stakeholders of the different options and capabilities of catch share programs; and to help organize collaborative efforts with interested Councils, states, communities, fishermen and other fishery stakeholders on the design and implementation of catch share programs.

---

[8] Magnuson-Stevens Fishery Conservation and Management Act, codified at 16 U.S.C. 1801 et seq.
[9] NMFS, 2010 Fisheries Economics of the U.S., 2008. NOAA Tech Memo NMFS-F/SPO-109, 177 p.
[10] NMFS, 2009. 2009 Our living oceans: Report on the status of U.S. living marine resources, 6th edition. NOAA Tech Memo NMFS-F/SPO-80, 369 p.

Why now?

The Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006[11] included two significant and complementary new provisions that contributed to NOAA's current focus on catch shares:

- The first provision required the establishment of a mechanism for specifying annual catch limits (ACL) in most fisheries by 2011. The ACLs place a firm cap on fisheries removals at a level such that overfishing will not occur. Accountability measures were required to accompany the ACL mechanisms.

- The second provision was the elaboration of criteria and guidance authorizing a program of limited access privileges (LAP) to help rebuild overfished stocks, reduce overcapacity if it exists, and promote safety, fishery conservation and management, and social and economic benefits.

A LAP is a means to distribute and enforce exclusive percentages of an ACL among participants. Taken together, ACLs and LAPs combine the positive biological benefits of a firm cap on fishery removals with the additional benefits of achieving important economic and social objectives necessary to support sustainable fisheries, but without the negative aspects of the race-for-fish with ACLs alone. Thus, it is an opportune time to consider the complementary use of ACLs and catch shares to meet the nation's unmet goals for fishery management.

In addition to Congress, other national experts[12,13] have recognized that catch shares are a tool that should be available for use in any fishery, subject to general guidelines for their design. Catch share programs (which include LAP and individual fishing quotas (IFQ) programs) have been used in federally-managed U.S. fisheries since 1990 by six different Councils in 14 different programs from Alaska to Florida. In addition, six states manage catch share programs. Internationally, similar programs have been used in hundreds of fisheries. Both here and in other countries catch shares have shown they can effectively achieve annual catch limits, reduce the negative biological and economic impacts of the race for fish, and when properly designed can eliminate overfishing and result in safer and more profitable fisheries while also addressing other social objectives. For example, where preserving cultural and historic use patterns in a fishing community is a high priority, a Council could design a catch share program to maintain traditional coastal fishing communities comprised of owner-operated fishing fleets.

Scientific analyses[14] show that fisheries managed with catch shares have demonstrated improved biological and economic performance relative to prior management using traditional tools. This

---

[11] Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006, Pub. L. 109-479.
[12] U.S. Commission on Ocean Policy, 2004. An ocean blueprint for the 21st Century. Final Report Recommendation 19-15 says in part "Every federal, interstate and state fishery management entity should consider the potential benefits of adopting such [dedicated access privilege] programs."
[13] National Academy of Sciences, 1999. Sharing the fish: Toward a national policy on individual fishing quotas. Committee to review individual fishing quotas, Ocean Studies Board, National Research Council, Washington, DC states on p. 5 that "IFQs can be used to address any number of social, economic and biologic issues in fisheries management. Alternative management approaches can achieve some, but not all, of the objectives that can be achieved with IFQs ...Although the IFQ is no panacea, it deserves a place in the array of techniques that may be needed in any particular fishery management plan."
[14] Sigler., M.F. and C.R. Lunsford, 2001. Effects of individual quotas on catching efficiency and spawning potential in the Alaska sablefish fishery. Can. J. Fisheries and Aquatic Science 58**:** 1300-1312. Arnason, R. 2005. Property rights in fisheries: Iceland's experience with ITQs. Rev. Fish. Biol. Fisheries 15:(3) 243-264; Newell, R.G., J.N. Sanchirico and S. Kerr. 2005. Fishing Quota Markets, Journal of Environmental Economics and Management, vol. 49: 437-462.; Branch, Trevor, 2008. How do individual

includes greater cooperative and stewardship behavior by fishing participants, and a slower pace of fishing. In evaluating ecological indicators after implementation of catch shares, discard rate (which declined significantly in catch share fisheries) showed a significant response whereas other indicators (exploitation rate, landings, and the ratio of catch to catch quotas) were distinguished by markedly reduced inter-annual variability.

In 2009, the Joint Ocean Commission Initiative (i.e., the members of the former U.S. Commission on Ocean Policy and the Pew Oceans Commission) issued a statement [15] to President Obama that endorsed the use of innovative, science-based management approaches, including carefully considering, and where appropriate, employing innovative management techniques such as LAPs, catch share programs and Community and Regional Fishery Associations.

Catch share programs can help transform fisheries and ensure they are a prosperous and sustainable element of a national strategy for healthy and resilient ecosystems for present and future generations. One of the challenges facing NOAA is the integration of new catch share programs with existing federal and state fishery management regulatory requirements, some of which will not be using catch shares. In some cases, fisheries cross Council, state and international boundaries. Harmonization of rules across several jurisdictions will require extensive planning and communications efforts between NOAA, Councils, states, Commissions and other management bodies especially during the transition period to new catch share programs. This policy acknowledges that challenge, and provides a foundation for facilitating the wide-spread consideration of catch share fishery management policies to achieve biological sustainability and economic prosperity, while enabling local fishermen and communities to be part of the process.

POLICY

To achieve long-term ecological and economic sustainability of the Nation's fishery resources and fishing communities, NOAA encourages the consideration and adoption of catch shares wherever appropriate in fishery management and ecosystem plans and their amendments, and will support the design, implementation, and monitoring of catch share programs.

Definition: "Catch share" is a general term for several fishery management strategies that allocate a specific portion of the total allowable fishery catch to individuals, cooperatives, communities, or other entities. Each recipient of a catch share is directly accountable to stop fishing when its exclusive allocation is reached. The term includes specific programs defined in law such as "limited access privilege" (LAP) and "individual fishing quota" (IFQ) programs, and other exclusive allocative measures such as Territorial Use Rights Fisheries (TURFs) that grant an exclusive privilege to fish in a geographically designated fishing ground. Definitions of related terms are included in the attached glossary.

---

transferable quotas affect marine ecosystems? Fish and Fisheries, 10: 39-57.; Essington, T. 2010. Ecological indicators display reduced variation in North American catch share fisheries. Proceedings of the National Academy of Sciences. 107(2): 754-759.

[15] Meridian Institute, 2009. Changing ocean, changing world: ocean priorities for the Obama administration and Congress. Joint Oceans Commission Initiative Report, Washington, DC.

The policy is intended to promote a future in which U.S. fisheries resources are managed for the greatest overall benefit to the Nation's current and future generations and in a manner consistent with the 10 MSA National Standards for fisheries conservation and management. NOAA does not require the use of catch shares in a particular fishery nor has NOAA made a determination that catch shares are the best management option for every fishery or sector.[16] However, it is NOAA's intent to encourage the careful consideration of catch shares as a *possible* choice to best meet the conservation, social and economic goals of fishery management.

To allow stakeholders to make an informed decision when considering a catch share option, *Councils should specify sufficient catch share design characteristics during the scoping phase for a proposed FMP or amendment such that stakeholders can understand their potential impact*. Major catch share design choices on such features as allocation and transferability will have varying consequences on their operation. However, NOAA is not advocating that every fishery management plan (FMP) or amendment submitted to the Secretary must include a catch share alternative.

Evaluating Catch Share Applicability: Studies of U.S. and foreign fisheries suggest that catch share policies have significant potential for increasing economic returns from fishing and ensuring the sustainability of fisheries. The fisheries that have seen the biggest economic gain from catch shares are those where there is the potential for high-end markets (investing in quality) and/or where there are advances in product recovery from eliminating the race-for-fish (e.g., whiting on the west coast). At the same time, not every fishery will ultimately be a suitable candidate for catch shares.[17] The following is a brief list of fishery characteristics indicating where catch shares could be particularly beneficial. The list is neither exhaustive nor prioritized, nor does it suggest that if a fishery doesn't have one or more of these indicators that it is not a good candidate for catch shares.

a. *Fishery is overcapitalized* – Overcapitalized fisheries are more likely to have lower economic returns to fishermen than could be achieved through catch shares. A fishery demonstrates excess capacity in the form of larger than necessary fishing fleet size, type or amount of fishing equipment, etc., to harvest the total allowable catch. Generally, historical open access policies lead to race-for-fish or derby conditions, and result in overfishing, overfished stocks and overcapitalized fisheries. If a fishery is overcapitalized, transferable catch shares can result in a more economically efficient fleet size.

b. *Stakeholders are receptive* – Well-informed fishermen who want to pursue consideration of catch shares will improve the likelihood of success of this fishery management option. Enabling stakeholders to evaluate their options by providing complete and unbiased information requires extensive education and outreach. Fisheries where this has taken place are good candidates for consideration. Single species or few sectors in a fishery make management less complex for any choice of strategy/approach. In the near term, catch share

[16] A sector is defined here as a distinct subset of fishery participants who share similar characteristics, such as a group of commercial, recreational or subsistence fishermen and, unless further qualified, includes the allied shore side entities they engage with. It does not equate to the use of the regulatory term sector or "sector allocation" in the New England Council groundfish management plan.

[17] Whether specific criteria are useful to determine if catch shares are applicable to a fishery was considered in the 1999 National Academy of Sciences study to evaluate individual fishing quotas (IFQs). That study favored the approach that all fisheries that can be managed using a total allowable catch are potential candidates for IFQs. See National Academy of Sciences, 1999. Op.cit. page 2.

application in a phased approach (i.e., species or sector) may be more amenable to stakeholders.

c. *Stocks are overfished* – Stocks that have a status of "overfished" or that are experiencing overfishing require a multitude of controls to regulate fishermen behavior. Such fisheries are among those now required to have annual catch limits (ACLs) and rebuilding plans under the MSA. While well–enforced ACLs will limit catches they do not address the destructive impacts of the race-for-fish, including in-season fishing closures. Combining ACLs with the allocation of exclusive privileges to stakeholders can help meet total allowable catch targets, reduce the negative impacts of the race-for-fish, promote more stable, year-round fishing, and promote greater freedom and flexibility in fisherman business decision making than when ACLs are used alone.

d. *Regional/Institutional infrastructure exists* – NOAA Fisheries Service regions with existing catch share management experience can take advantage of economies of scale in management operations for multiple catch shares in a region, thereby reducing costs to fishermen and taxpayers. The marginal costs for data collection, administration and enforcement can be spread over multiple species or fisheries. Each circumstance must be evaluated on its own merits since the flexibility inherent in catch share program design allows them to be customized to succeed under varying conditions.

e. *Bycatch is significant* – Excessive bycatch is an indicator catch shares may contribute to a solution. In its 2007 meta-analysis, the Redstone Group[18] analyzed 10 U.S. and British Columbia fisheries managed by LAPs and found seven instances where LAPs contributed to a positive environmental recovery by promoting more selective and efficient fishing practices. There is evidence that IFQs slow the pace of fishing and encourage cooperation and fishermen stewardship that result in positive ecological implications relative to overfishing, bycatch mortality and habitat disturbance.[19] Cooperatives formed under catch share programs (e.g., Gulf of Alaska rockfish pilot program and Bering Sea pollock and non-pollock cooperatives) have also experienced decreased discards as fishermen are able to become more selective and redirect their effort away from areas of undesirable bycatch to avoid prohibited and non-target species, including the use of incentive-based transferable Chinook salmon bycatch caps. Notwithstanding these benefits, care must be exercised in the design and monitoring phases to prevent or control for any highgrading of fish harvested that may occur when bycatch is counted against quota share and there is weak at-sea enforcement.

CATCH SHARE GUIDING PRINCIPLES

The MSA sets forth a number of criteria for consideration in the design and implementation of catch share programs. Councils and NOAA must follow these MSA requirements. In addition, NOAA recommends adopting the following guiding principles to ensure the best possible catch share design and program outcomes. (In the following paragraphs, reference to the Councils also includes the Secretary of Commerce with respect to FMPs or amendments for Atlantic Highly Migratory Species).

[18] Redstone Strategy Group, 2007. Assessing the potential for LAPPs in U.S. fisheries. Report prepared for Environmental Defense, 41pp., Washington, DC.
[19] Griffith, D.R., 2007. The ecological implications of individual fishing quotas and harvest cooperatives. Frontiers in Ecology and the Environment. **6**(4): 191-198.

Specific management goals: *All fishery management programs should identify specific measurable goals for management.* Councils should develop explicit goals and a specific future outcome for the fisheries under their stewardship. This is particularly important for fisheries considering catch shares because these programs have a great deal of design flexibility to accomplish a variety of goals. The consideration of a broad range of management alternatives, including catch shares, is desirable to determine which management approach is best suited for each fishery since each one is different. Examples would include eliminating overfishing and race-for-fish or derby fishing behavior; promoting more precise catch accounting to meet ACLs; identifying bycatch reduction targets and improved ecosystem functioning; improving socio-economic conditions for fishery participants and/or fishery-dependent communities (such as stabilizing employment or new job creation).

With respect to improved ecosystem functioning, historically most U.S. FMPs have focused on single species or fishery-specific goals rather than a broader ecosystem approach to management. The traditional tools used have been incapable of addressing broader ecological stewardship and policy goals for healthy and resilient ecosystems. The 1999 NRC report included ITQs in this category, suggesting that catch shares are not a conservation tool, but are merely an economic allocation tool. Recent experience with catch shares in U.S. fisheries has shown both improved fishery conservation and economics by placing a firm fixed cap on harvests and eliminating the race-for-fish. Because catch shares change the incentives and resulting behavior of fishermen, it is possible to design and structure programs that can directly and indirectly promote broader environmental and ecological goals. For example, the allocation of privileges could be weighted to individuals or entities with lower bycatch rates or who utilize fishing gear less destructive to habitat. Councils could also design catch shares using set-asides for “green” fishing behavior (giving preference to ecologically-friendly gear, fishing locations, and energy use), or use differential royalty pricing for catch shares of critical bycatch or overfished species. These catch share design features create economic incentives or disincentives to ensure rebuilding of overfished stocks or protection of essential forage, prohibited species, and critical habitat. The resulting outcomes are consistent with an ecosystem approach to management.

Councils should develop these explicit management goals early in the management plan development process. Based on these goals, a uniquely tailored catch share program or alternative can be designed as the Council moves from scoping to preparation of management alternatives. All FMPs must be consistent with the MSA National Standards for conservation and management. By adopting this additional principle of identifying specific, clear, biological, economic and social objectives and outcomes for their fishery, a Council can design appropriate catch share management measures and controls and avoid unintended consequences. For example, in considering a Council’s catch share design option, fishermen will need to know how their share of the privileges to be allocated will change under various designs, so early identification of the program goals and associated design features is important. By specifying its future vision for a fishery a Council can then adopt tailored allocation, transferability and adaptive management design elements to promote goals such as sustained community participation, allowance for new entrants, and preservation of owner-operated fleets, rather than leave such potential desired outcomes to chance.

Allocations: *NOAA recommends Councils periodically revisit the underlying total allocation to each sector of a fishery (e.g., commercial and recreational) on a regular basis, regardless of whether catch shares are the management tool of choice for one or more sectors.* Determining how much fish individuals or groups have access to is among the most challenging policy decisions for the Councils. The MSA National Standards require that all management actions achieve the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities, and that any allocation of fishing privileges be fair and equitable and reasonably calculated to promote conservation. All Councils currently make allocation decisions that underlie management, whether to recreational, commercial, tribal, indigenous and subsistence sectors; among gear types within a sector; or to reserve allocation for reasons of research, conservation, forage and/or scientific and management uncertainty.

Once a Council has allocated portions of the overall ACL to the various sectors of the fishery, it can consider separately whether to manage one or more of those sectors using catch shares. By itself, the implementation of a catch share plan does not modify or alter the allocation of catch between sectors. Rather, a catch share program subdivides and distributes privileges to individuals or groups within a given sector, usually in the form of a privilege to harvest a percentage of the sector's allocation. The approval of a new catch share plan does not impede or preclude a subsequent adjustment in the underlying allocation to the various sectors in the fishery. Thus, the underlying allocation to a sector can increase or decrease over time, while leaving the distribution of catch shares within that sector stable.

NOAA will work with Councils and stakeholders to review guidance to ensure allocations result in the greatest overall benefit to the Nation, including the evaluation of biological, economic and social criteria in such decision making. In existing catch share programs this evaluation of allocations should be part of the MSA-mandated 5-year review. For new catch share programs this evaluation of allocations should precede the final design and distribution of catch shares to ensure the requirements of the MSA and the objectives expressed by the Council in its FMP are met.

The MSA takes a broad view on participation in LAP programs. Specifically, through the designation of new catch share entities called Fishing Communities (FCs) and Regional Fishery Associations (RFAs), people and entities who are substantially dependent on or substantially engaged in the harvest or processing of fishery resources are authorized to use the harvest privileges distributed by the catch share program. For example, seafood dealers and processors are an integral part of every fishery. Their investments produce significant social and economic benefits to the nation, and provide a source of jobs in coastal communities. However, except for the Alaska crab program, Congress has not authorized the allocation of separate processing privileges (called "processor shares"). The use of FCs and RFAs is one means that fishing dependent businesses besides harvesters can benefit from catch shares.

These same MSA authorities can also be used to design catch share programs with features that satisfy new consumer demands for local, direct marketing arrangements of fresh minimally processed product. Specific guiding principles on FCs and RFAs are included below in the Fishing Community section. However, with respect to initial allocations, catch share designs under the reauthorized MSA can fulfill a broader range of Council and stakeholder biological, economic and social objectives, and these objectives can be reinforced by specifying complementary transferability provisions.

Many catch share programs use a control date to identify the eligibility of participants and apply a time period of historical landings to establish the percentage of catch share an entity will receive. *Councils are advised to consider a broad range of participation criteria to ensure the most fair and equitable catch share distribution for their given circumstances.* For example, Councils will decide how to deal with a variety of contingencies that affect historical catch patterns, from skipper illness or vessel disrepair, to voluntary conservation efforts beyond requirements of law to conserve certain species that reduced their catch histories. In addition to a historical landings criterion, some part of the allowable catch could be allocated equally among participants, some part may be auctioned, and/or some part may be reserved or set aside for special purposes. In some of Australia's catch share programs an independent third-party derives the allocation formula for the fishery to promote fairness. In the U.S., an appeals process for administrative review of initial allocations is required for every LAPP.

Councils also should link their allocation decisions to the attainment of their goals for new entrants, adaptive management, and the desired distribution of future benefits, especially if their fisheries are undergoing rebuilding. The hurdles for new entrants will be quite steep if all available catch shares are initially distributed without any set-asides or policy for redistribution. The availability of programs assisting new entry such as loans, set asides and permit banks for future generations must be considered at the outset. Set-asides, whether for communities, anticipating the possibility of unintended negative impacts during the transition to catch shares, providing incentives for conservation and innovation/gear research, or for new entrants must also be factored into the initial allocation analysis.

Transferability: *Councils should thoroughly assess the range of options and net benefits of allowing transferability of catch shares.* The MSA requires Councils to establish a policy and criteria for the transferability of limited access privileges through sale or lease. The choice of whether, when and to whom to allow transfers of catch shares by initial recipients is one of the many design options the Councils must evaluate and decide. After the Council's decision regarding the underlying allocation of ACL to the different sectors, its decision on transferability is one of their most significant and far-reaching policy choices. The majority of catch share programs in place allow at least some degree of transferability. Transferability of shares can serve multiple purposes, and any decision to allow transfers can vary in degree. In all circumstances a Council must decide how fast and how much they are willing to allow their initial distribution decisions to be changed by sales and leases. There is likely a middle-ground that Councils will choose between complete transferability and prohibitions on any transferability. The following paragraphs look at some of the objectives served by transferability, some of the possible risks involved, and some guidance to mitigate these risks.

Transferability is the key element of the goal to improve the economic performance of a commercial fishery. Transfers allow privilege holders to produce the allowable harvest as efficiently as possible by acquiring or disposing of privileges to match their desired vessel activity and capacity. This allows fishermen to harvest their assigned quota at the least cost, and provides fishermen with a valuable asset and compensation if they choose to leave the fishery.

However, having too few rules or restrictions on sales and leases of catch shares could have undesirable consequences. Carefully constructed initial distributions of privileges to achieve certain biological, economic or social objectives could be undone by allowing unrestrained transfers. For example, a Council may have chosen to distribute shares between different groups based on their ability to stay within established ACLs (management uncertainty), or to forgo some economic efficiency to support important goals for preserving existing geographic, vessel size or gear distributions, or important fishing community or employment-based objectives. These objectives could be undone by an unrestricted marketplace.

Moreover, the MSA legislative history indicates Congress did not intend for LAPPs to be used as a mechanism to further reduce harvests through acquisition of catch quota by those who are not fishery participants (i.e., to allow non-fishing interests to acquire shares and not fish them). Congress indicated the total quota available for harvest is established separately under the conservation requirements of the Act. Unrestricted transfers to non-participants could change the likelihood of meeting the Council's objectives, and suggests certain transfer criteria as allowed by the MSA may be desirable.

Transferability decisions also control future entry to and exit from the fishery. Councils should anticipate and evaluate many future circumstances and develop a comprehensive transfer policy. The range of questions include whether to allow inter-generational transfers of privileges within a fishing family, or to allow inter-sector transfers to account for changes in demand for fishery resources, such as recreational fisheries where population growth and participation rates are expected to increase over time (see further discussion below in the section on distinctions among sectors). The MSA states that privileges are not issued in perpetuity. *Councils are thus advised to develop written redistribution policies, including what happens to these privileges upon the retirement or death of the initial recipient*, or subsequent lessee or holder if so allowed. If all privileges revert back to the Council at some point then a redistribution process should be incorporated into the program design. If the privileges do not revert back for redistribution then opportunities for new entrants are more dependent on the marketplace. In the absence of specific Council guidance, courts will make individual determinations on the future disposition of catch share privileges that may not be consistent with the objectives of the Councils.

In determining a transferability policy, Councils should establish eligibility and participation criteria much as they do for the initial distribution of privileges. While the MSA provides some exceptions to who can acquire and hold privileges, Councils have wide latitude in specifying who is eligible and can participate in a program. For example, to support management goals seeking to preserve traditional fishing patterns, a Council could establish criteria to limit transfers: only among active fishermen; to fishermen groups or broader community associations; or among particular gear regions or vessel types. Depending on the status of the managed fishery, the maintenance of the status quo may be contradictory to other Council and MSA goals and objectives for rebuilding overfished stocks or achieving the greatest overall benefit to the nation.

To determine the appropriate transferability option for their fishery, Councils should ensure frequent consultation with fishermen and promote transparent public participation in the crafting of their participation criteria, analysis of the trade-offs, and evaluation of the outcomes.

A Council could adopt various eligibility and participation criteria to discourage privileges from being held by non-fishing interests. Both the MSA National Standards and the LAPP provisions affirm the purpose of the MSA is the conservation and management of the nation's fishery resources, not the development of speculative financial instruments or investment opportunities for individuals or businesses not substantially participating in the fishery. The Senate Committee report on MSA[20] cited that "*Determinations of substantial participation and substantial dependence shall be established by the Secretary upon recommendation by the Council*." Thus, Councils should design programs that are consistent with the MSA requirements and Council objectives. *Councils are advised to establish a clear administrative record linking their management goals and objectives to any provisions limiting transferability such as "owner-on-board" "use it or lose it" or "active fishing entities" criteria.*

One of the risks associated with allowing transferability is the potential accumulation of excessive shares. The MSA requires Councils to establish appropriate caps to prevent excessive accumulation of privileges. The actions of fishermen regarding harvest privilege accumulation and the effects on competition are further governed under federal antitrust laws. In addition, Councils are required to consider additional procedures to address concerns over excessive geographic or other consolidation in the harvesting or processing sectors of the fishery as part of their consideration of the basic cultural and social framework of the fishery. Specification of excessive shares must consider the specific circumstances of each fishery, and experience has shown a wide range of concentration exists in many fisheries without the use of catch shares. Fishermen already take advantage of economies of scale in their business decisions on the number of permits held and vessels owned, and make other business–driven choices on fishery entry and exit, home port and gear. *Councils therefore should be mindful of imposing too many constraints on transferability that would stifle the innovation and flexibility fishermen need for competitive cost-efficient business decision making.*

Another risk associated with transferability is that participants may not immediately understand the benefits and costs of leasing or selling their privileges and thus may be prone to make uninformed decisions in these newly developed markets for privileges. *Councils may design programs that help protect fishermen during this transition period, such as prohibiting sales or limiting transactions to leases in the initial year(s), as well as providing extensive outreach and training materials to the industry on the means of conducting business in transferable privilege markets.* NOAA can contribute to this effort by establishing a source of authoritative market transaction information on leases and sales and establishing an exclusive central registry system for limited access system permits and privileges.

Councils can use their transferability options to address important distribution-related objectives in catch share design as well as provide for management flexibility. For example, the underlying characteristics of a sector can improve or deteriorate over time in any fishery. Councils can improve management flexibility in responding to these changes by setting aside a fraction of all privileges and then allocating them each year (or some other period) to account for changing short-term needs.

Transferability can also be important in multisector fisheries when the Council's goals for different sectors may vary over time. Allowing inter-sector transferability of privileges in multisector catch share programs would allow fishermen to trade in the benefits arising from a successful catch share program. This inter-sector trading could also be helpful in accounting for uncertainty, or for forecasted changes in the biology and socio-economic characteristics of a fishery sector, without requiring a Council action to reallocate the entire quota or redistribute

[20] Report of the Committee on Commerce, Science, and Transportation on S. 2012. Report 109-229, April 4, 2006, page 27.

shares by plan amendment. *Councils should consider allowing the inter-sector transferability of catch share privileges to respond to changes in demand and promote future access opportunities wherever catch share privileges are used in multisector fisheries.*

In summary, transferability can help achieve goals for reducing overcapacity and improving economic efficiency; and can control the achievement of many other biological, economic and social objectives the Councils may have established. Councils have some significant transferability decisions to make as either too few or too many transferability rules may have undesirable effects. NOAA is committed to providing advice and support to the Councils and affected stakeholders in evaluating transferability options.

Distinctions Among Sectors: *No fishery or sector (e.g., commercial, recreational or subsistence) is required by the policy to adopt catch shares* . Councils should evaluate the pros and cons and consider the appropriateness of catch share programs to decide which, if any, sectors may benefit from their use. Under their MSA authority, Councils have a range of options to consider. They include the immediate adoption of catch shares for all fishery sectors; for only some sectors; phasing-in their adoption over time; or not adopting catch shares for any sector. Historically, the application of catch shares has focused on the commercial sector of a fishery. When a Council recommends a catch share program for the commercial sector, the MSA does not require catch shares to be adopted in the recreational or any other sector of a fishery. The Councils may also encounter fisheries where catch shares cannot provide positive net biological, social or economic benefits to all sectors of the fishery, thus *Councils may decide where and when to recommend a catch share program.*

The following paragraphs describe guiding principles associated with applying catch shares to different sectors. Special attention is given to application of catch shares to the recreational component.

The simplest application of a catch share program is in a single-sector fishery. Even with variations in gear, fisherman experience or geography, a single-sector will still have the greatest homogeneity in the fishery's biological, economic and social characteristics, which tend to make program design choices easier. However, a plan for catch shares for just one species in a multispecies fishery, or one sector in a multi-sector fishery, may have effects on other species or sectors of the fishery that should be accounted for. In these cases, *Councils should evaluate the effects of management in all segments of the fishery.* This should be done at the earliest stage of consideration of catch shares as a management option to allow adaptation in both the catch share and non-catch share program elements.

<u>Recreational anglers</u> – A successful recreational angling experience is not as dependent on harvest as in commercial fisheries. Many anglers participate on the expectation of a catch and continue to fish without realizing a positive catch on every trip, and some anglers release the fish they do catch. Many anglers prefer management options that do not foreclose fishing opportunity or access and will accept a lower catch limit in return.

Limited access, however, is a pre-requisite for a MSA LAPP. Thus, any recreational management program based on allocating shares to a limited number of individuals may not be a widely-accepted approach by anglers because it contradicts a longstanding open-access tradition. Designing and enforcing an individual angler catch share program for potentially millions of participants in a fishery could also be a prohibitively costly and complex undertaking. Thus, as explained in more detail below, NOAA will support the design and implementation of catch share programs for the recreational charter and head boat sectors where appropriate, but does not advocate the use of individual private angler catch shares. However, NOAA will support Councils in the identification and application of innovative management measures that both promote individual recreational angler fishing access and foster sustainable fisheries.

There are a few examples[21] where a limited number of tags for individual fish have been allocated to anglers on a per capita or lottery basis. Historically these tagging programs have been used where the resources were limited and a strict constraint on landings was required. NOAA will continue to work with Councils who have expressed interest in adopting such tag programs.

NOAA also recognizes the interest among recreational fishermen to sustain or increase their fishing access, and as such is open to considering innovative approaches that may allow for this in the context of a Council's goals and objectives. For example, some angler groups have suggested an approach in which their sector might increase its underlying allocation of the ACL through inter-sector purchase of commercial catch shares and creating a recreational catch share pool. The purchase and management of the shares would be overseen by an agreed-upon third party such as a state fisheries agency or non-profit organization, similar to an RFA under section 303A of the MSA. The entity could increase the amount of fish in the pool by transfers of shares from other sectors as long as share transferability was allowed by the Council and other program requirements were met.

If a Council recommends such inter-sector trading, it should do so in a manner that considers trading in both directions, promotes the conservation and accountability objectives of the MSA, and ensures that inter-sector transfer of shares results in no loss in ACL accountability. While many variations and details must be evaluated to establish this as a management alternative, because of high stakeholder interest *NOAA is committed to working with any interested Council, state agency, and angling organizations on the development of new approaches for fishing access by recreational fishermen through appropriate inter-sector trading programs and/or catch share pools.*

The for-hire component of the recreational sector is a significant part of the U.S. fisheries contribution to the economy and provides opportunities and fishing access to millions of anglers on charter and head boats and guided fishing trips. Charter and head boat captains manage a fishery dependent business similar to commercial fishermen, with many for-hire captains also possessing a commercial fishing license. Given these similarities, Councils might consider catch share management for the charter and head boat sector in a given fishery. The MSA and other applicable laws do not prohibit the adoption of a catch share program for just the for-hire recreational sector if a Council and stakeholders wish to do so. Thus, NOAA supports the design and development of catch share programs for the recreational charter and head boat sector as appropriate. Councils should evaluate these options and provide an open and transparent opportunity for stakeholders to assess the pros and cons of this approach to see if a catch share is appropriate for meeting the goals and objectives of their FMP.

[21] See for example http://www.fish.wa.gov.au/docs/pub/RecPinkSnapper/index.php?0103#A09

Since experience with developing catch share programs for the for-hire component of the recreational sector is limited, *NOAA is willing to work with Councils, states, commissions, and interested for-hire stakeholders to consider a pilot program to design and implement an effective for–hire catch share program*. This will require close coordination with the for-hire sector of the fishery. Such a case-study approach would provide valuable guidance and best-practices for other Councils to follow by resolving any impediments to the use of catch shares in these circumstances and provide a useful template that could save limited resources and time for future efforts.

A key requisite for improved management in the for-hire sector is related to enhanced catch accounting. Therefore, *NOAA recommends Councils continue working with NMFS, stakeholders and regional data collection partners toward implementing data collection enhancements to improve management such as Marine Recreational Information Program-endorsed methods for mandatory, validated electronic trip reporting for charter, party, and other for-hire recreational fishing.*

Improved social and economic data are also key for better conservation and management for fisheries under any management regime. These data are essential to computing and tracking allocations, and conducting analyses of the relative economic values and impacts of different fishery sectors. Natural and man-made disasters in the Gulf of Mexico in recent years have demonstrated that we do not have an adequate baseline of information on the social and economic contributions made by all types of fishing, including essential employment and value-added economic statistics. Filling this gap is critical not only to the use of catch shares but to all other fishery management and ocean policy decisions made by NOAA. Therefore, *NOAA recommends Councils consider endorsing the obligatory submission of data, including social and economic data, in return for the use of the public's fishery resources.*

In summary, Councils have discretion over whether and which sector to manage with catch shares. Catch share programs can implement whatever distribution of the allowable catch the Councils decide upon, subject to MSA requirements. The design flexibility associated with catch shares (including transferability provisions such as inter-sector trading) can help ensure Council goals and objectives are achieved for all sectors.

Duration: Catch share privileges are not granted to an entity in perpetuity. The MSA defines a LAP as a permit, issued for a period of not more than 10 years, which will be renewed if not revoked, limited or modified. The program can be amended at any time specified by the Council. Regular monitoring and review of LAPPs by the Council is required by statute with a formal and detailed review 5 years after implementation of the program and at least every 7 years thereafter. If the underlying allocation between sectors for a given fishery has not been reviewed by the Council since a LAP was initially approved, the Council should include such an assessment as part of its 5-year review unless there are compelling reasons not to do so. The mandatory 5-year review for each LAP is an appropriate time for a review and assessment of a given fishery's allocations since the fishery should have benefited significantly during its extended period of management under the LAP. Any such reallocations must be made in accordance with the National Standards of the MSA. *NOAA recommends Councils apply the LAPP review and duration principles and requirements to all catch share programs, and should explicitly define the duration of their catch share program to reinforce the fact they are temporary privileges, not property granted in perpetuity.*

Fishing Community Sustainability: *Councils should develop policies to promote the sustained participation of fishing communities and take advantage of the special community provisions in the MSA.* This will help assure sustainable fishing communities, including the continuation of working fishery waterfronts, fishery infrastructure, diverse fishing fleets, and recreational access. Fisheries have provided the underlying economic, social and cultural fabric of many coastal communities for centuries. Many Alaska native villages and Western Pacific island communities have fishing histories going back thousands of years. Changing circumstances in fisheries as well as many outside influences are resulting in risks to the sustainability of the fishing community way of life.

National Standard Eight of the MSA and section 303A require management authorities to take into account the importance of fishery resources to fishing communities. Section 303A provides unique fishing community and regional fishing association design options for LAPPs and requires Councils to consider the basic cultural and social framework of a fishery being considered for a LAPP. In particular, the MSA calls for Council development of policies to promote the sustained participation of fishing communities as a means to satisfy this requirement; this includes commercial, recreational and subsistence fishing communities.

NOAA will work in partnership with other federal agencies and coastal states, consistent with the goals of the MSA and each Council's FMP's objectives, to use catch shares to promote sustainable fishing communities, resource access and co-management principles. To this end, NOAA will support community-based design and investment in FCs and RFAs. This partnership would include issuing guidance and providing technical assistance in the development and submission of community sustainability plans under MSA Section 303A, and providing technical assistance in the creation of fishing community trusts or permit banks to help retain access to fisheries resources by fishermen in local communities.

In addition *NOAA will support capacity building in fishing communities to help fishermen's/community groups explore and organize catch share options. NOAA will also encourage public-private partnerships, and collaborate with state and local governments, regional economic development districts, public and private nonprofit organizations, and tribal entities to help communities address problems associated with long-term fishery and community sustainability*. In planning and adapting to changing economic, environmental and management conditions, additional capacity and statutory authority may be drawn from other NOAA line offices, other Commerce bureaus (e.g., Economic Development Administration assistance to communities to develop and implement economic development and revitalization strategies) or other agencies (such as the Small Business Administration to deal with access to capital and business planning expertise, or the Department of Agriculture on setting up direct marketing structures). NOAA will facilitate stakeholder access to these resources.
The Councils and NOAA share responsibility to engage fishing communities directly in the development of catch share programs. Two General Accounting Office reports[22] highlighted a series of actions to improve community engagement in catch share programs including:

[22] Government Accountability Office, 2004. *Individual Fishing Quotas: Methods for Community Protection and New Entry Require Periodic Evaluation*. GAO-04-277.; Government Accountability Office, 2006. *Fisheries Management: Core Principles and a Strategic Approach Would Enhance Stakeholder Participation in Developing Quota-Based Programs.* GAO-06-289.

(1) Providing education and outreach; (2) Holding meetings using different times, locations, and formats; (3) Streamlining the [catch shares] program development process; (4) Diversifying interests represented in the council process; and (5) Sharing decision-making authority. Both *Councils and NOAA should be more proactive in seeking out community participation*, for example through both expansion of membership on Council panels and committees and more direct outreach by the government in local communities.

Catch share programs provide new means for engaging communities directly through allocation of catch shares using FC, RFA and catch share set-aside provisions. Other design options include provisions that: allow a community the right of first refusal on catch share transfers, establish geographic restrictions or prohibitions on transfers, and support for the acquisition of additional catch shares through loan programs and support for permit or quota banks. Furthermore, additional catch share design options on eligibility, participation, new entry and transferability can result in preserving the economic vitality of communities by preserving continued access to shares over time.

However, *Councils must be careful not to over-prescribe protections to preserve community status quo and preclude opportunities for innovation, improved efficiency and structural adjustments that fishermen, processors and related businesses need to remain competitive. Councils will need to: set clear, balanced objectives for all stakeholder groups; evaluate the array of benefits and costs; and recognize the cumulative impacts of many regulatory actions.*

This challenge associated with seeking the simultaneous attainment of biological, economic and social objectives in not unique to catch shares. Any management program seeking to rebuild fish stocks to biological target levels will likely face economic and social losses in fleet size, distribution or catch rates. Any management program that seeks to maintain traditional employment and community structures may sacrifice economic efficiency goals and compromise biological overfishing limits. The tension may even be found within a fishing port as policies that are beneficial for an individual harvester may not equally benefit the larger fishery-dependent community. The Councils must rely on the deliberative public and transparent MSA process to meet all 10 MSA National Standards and satisfy the objectives of their FMP. Councils face a delicate balancing act to achieve all goals, and must be willing to evaluate and make the resulting trade-offs. One advantage of catch shares is their design flexibility compared to traditional measures that allow Councils to more easily adapt to or mitigate these competing or conflicting outcomes. However, *to be most effective Councils must make use of the entire range of catch share design options and engage all the relevant stakeholders.*

Royalties: Section 303A(d) of the MSA requires the Councils to consider the use of auctions or other means to collect royalties for the initial or any subsequent distribution of LAPs. (Technically, a royalty is but one mechanism for collecting resource rent, and other mechanisms include auctions and taxes. Resource rent is an economic term defined as a surplus value, i.e., the difference between the price at which fish can be sold and the respective production costs which include a normal return.[23]) Many managers and stakeholders confuse rent recovery with cost recovery, which is addressed separately in the following section.

[23] For a plain-language explanation of resource rent and cost recovery see: Sinner, Jim and Jorn Scherzer, 2007. The public interest in resource rent. *New Zealand Journal of Environmental Law, Vol. 11, 2007: 279-295.*

NOAA will assist Councils if and when they determine that it is in the public interest to collect royalties in connection with the initial or subsequent allocations in a limited access privilege program. The Nation's fisheries resources are managed in the public trust by NOAA. Many of the Nation's other public resources consumed or used by private individuals are subject to a payment (i.e., resource rental) for their usage (e.g., oil and gas leases, permit fees for grazing or silviculture on federal lands, auctions of federal radio frequency spectrum). The government recovers some rent for public resources other than fisheries. To date, the recipients of initial allocations of catch shares have received their allocations without a fee based on their historical fishing records; no Council has adopted a program to collect resource rent.

Any FMP or amendment containing a LAP program should include a description of how the MSA Section 303A(d) provision was addressed. If a Council decides to include a royalty program, the revenues would be deposited in a special fund and can only be expended in the fisheries from which they came. Currently no LAP program collects royalty payments. Many important social, economic and community objectives of a FMP could be funded by royalty payments such as supporting specific goals for research, monitoring, new entrants/small entities, or sustainable fishing communities. Collection and use of royalty payments is one of several options to deal with criticisms that catch shares redistribute wealth and create windfalls to initial recipients. The capitalization of privileges also creates barriers to new entry. Initial share allocations/set-asides and adaptive management programs can deal with entry barriers before the fact whereas loans/subsidies for share purchases are alternatives that can support similar outcomes after the fact.

The MSA provides the Councils with a great deal of flexibility to determine the timing, amount and means to collect royalty payments. For example, royalties could be deferred in the initial years of implementation to account for weak economic conditions if stocks need to be rebuilt at a program's outset. Not all the resource rent has to be recovered and any royalty program must be carefully designed and sized so it does not undermine or offset the biological conservation and economic incentives associated with catch shares. The Councils must evaluate whether the benefits over time of improved economic performance and stock rebuilding should accrue to the initial recipients of catch shares or whether royalty payments should be adopted to capture some of that value for the public. NOAA will assist Councils and stakeholders to provide more specific guidance on royalty program design options where desired, and consult with Councils, states and affected stakeholders on use of any subsequent royalty funds collected.

Cost Recovery: *It is NOAA policy to compute and recover from participants only the incremental operating costs associated with LAPPs.* Cost recovery aims to recover a variety of government costs attributable to the private sector use of a public resource. Section 303A(e) of the MSA requires cost recovery of the management, data collection and analysis and enforcement programs that are directly related to and in support of LAP programs. The relevant costs to recover are the incremental costs, i.e., those costs that would not have been incurred but for the LAP program, since cost recovery is not authorized for non-LAP fisheries. Conceptually, measuring these costs involves a "with and without" comparison of the cost of running the management program for the specified fishery under the *status quo* non-LAP regime, relative to the cost of running the management program under the LAP program. The difference is the incremental costs attributable to implementing the LAP program. It is possible that the incremental costs could be negative (i.e., that costs for management, etc., go down under a catch share program) and therefore no cost recovery fee needs to be levied.

This approach requires the identification of the incremental costs of adding LAP programs relative to the entire cost of compliance monitoring, data collection, stock assessment and catch specification. However, it excludes the costs of managing a resource for the benefit of the public, such as costs for species preservation or biodiversity protection.

Costs for catch share programs include the same operational categories associated with other management strategies but may incur some additional design, operational and monitoring costs due to changes in scale. However, fixing inadequacies in the quality, frequency or coverage of existing monitoring or enforcement programs should not be attributed as catch share costs when these needs pre-existed the catch share program. While cost recovery will reimburse the public for some of the costs of management, data collection and enforcement, actual costs can exceed the 3-percent MSA cap, particularly in the early years of a catch share program and in cases of currently overfished stocks. Design costs (i.e., prior to implementation of a LAP) are also not subject to cost recovery.

Adequate cost recovery can be especially problematic in economically depressed fisheries or for low-valued species. The subject of who pays for these costs may become an impediment to catch share support in the short term. Therefore, government support may be needed for some fisheries to address start-up and transition costs. Such investments are justifiable for catch share programs where the benefits of rebuilt fisheries can outweigh these costs in a relatively short period of time for most fisheries.

Under any structure, *NOAA and Councils will need to design the most efficient catch share programs possible to meet their needs and minimize costs to the participants and the public.* This includes consideration of common infrastructure capabilities that support multiple catch share programs and spread the costs across multiple fisheries.

Review Process: *Councils should periodically review all catch share and non-catch share programs. The intent is to ensure that management goals are specified, measurable, tracked and appropriate steps taken to ensure a program is meeting its goals and objectives.* The review process is the final stage of the management cycle after setting specific objectives and implementing and monitoring a FMP. The MSA requires Councils to regularly monitor and review the operations of its LAP programs. Once management goals and FMPs are in place, section 303A(c)(1)(G) requires the conduct of a formal and detailed review after 5 years for each LAP program. In addition, the Secretary is required to review on a continuing basis and revise as appropriate the conservation and management measures included in Atlantic Highly Migratory Species plans. However, Councils are not currently required to conduct similar periodic reviews of their non-LAP fisheries.

Councils and NOAA must establish relevant performance measures. Performance metrics for some of the typical fishery goals may include how fishery stocks responded to management; what were the impacts on fishing communities, participation and entry into the fishery; what happened to prices, revenues and profits; and how recreational fishery access and participation rates changed after program initiation. Determining relevant performance measures and collecting data to monitor the outcomes of catch share programs for use in a review process is essential. NOAA is committed to working with Councils, stakeholders, the Department of Commerce, the Office of Management and Budget, and Congress in improving and monitoring useful and relevant performance metrics for all U.S. fishery management policies, not just catch share programs. The derivation of such performance measures will contribute to the Council FMP Review Process described earlier.

Performance measures need to be linked back to the initial objectives in a FMP. Many current FMPs have general and sometimes vague objectives. Objectives for biological, economic and social outcomes should be readily measurable, such as eliminating overfishing and the race-to-fish or derby fishing behavior; promoting more precise catch accounting and reducing scientific uncertainty to meet ACLs; reducing bycatch and improving ecosystem function; improving socio-economic conditions for fishery participants and/or fishery-dependent communities.

Catch shares can result in fishery improvements in many areas but the metrics chosen to monitor performance should not be limited by the current availability of data. It is important to ensure in the catch share design stage that share holders will supply relevant data to monitor program performance in return for their allocation. This includes obtaining more specific biological and economic performance data from the participants, all in accordance with applicable law governing maintenance of business trade secrets and confidentiality of data. In addition, the social recovery metrics should encompass the broad range of possible social and community impacts. Relevant measures to be considered may include impacts on quality of life, degree of community stability and preservation of cultural values and traditions.

Summary of Guiding Principles: The key to a successful catch share program is a thoughtful program design process. There are many tools and references available to help Councils design good programs. The guiding principles described above reflect experience and practices from many current catch share programs. Throughout, the NOAA policy has emphasized that each Council's fisheries are different. A comparative framework is an efficient means to assess the different design and implementation choices for management of a particular fishery or sector. A useful starting point for evaluating the pros and cons of different catch share design options can be found in NOAA's technical memorandum on LAPs[24] where it identifies seven criteria for the evaluation of LAP programs relative to other types of management strategies for a particular fishery. *NOAA is committed to working with the Councils, recreational, commercial and other stakeholder groups to help them assess their options and the advantages and disadvantages of adopting a catch share program for their sector, and research areas that need further investigation.*

CATCH SHARE PROGRAM SUPPORT

Because of the effectiveness, flexibility and the potential applicability of catch shares to many fisheries, NOAA will provide leadership, technical advice, and other support for the consideration and use of catch share programs. To achieve this end, NOAA will collaborate with its many federal, state and constituency partners to support catch share programs in the following four categories:

1. **Reduce technical and administrative impediments to designing and implementing catch share programs.** NOAA will assist Councils and stakeholders that want to consider

[24] Anderson, L.G. and M.C. Holliday (Eds.), 2007. Design and use of limited access privilege programs, NOAA Tech Memo NMFS-F/SPO-86, 156p.

catch share programs with technical and administrative support to help them design and implement a catch share program, while empowering local fishermen to be part of the process. This includes assisting in research and evaluation of catch share applicability for their particular fishery, resolving outstanding questions on application of the MSA and other legal requirements to their proposed design, and organizing a common infrastructure and enforcement protocols to minimize program costs and promote "best practices."

2. **Provide expertise and related support to assist development of new catch share programs.** NOAA will provide expertise and work with Councils, interested stakeholder organizations, and other partners to adopt and implement catch share programs that are cost effective and meet the Councils' objectives. This includes providing analytical capacity through staff details and access to external experts, providing analysis of the impact of alternative allocation and transfer options between sectors, providing tools for assisting fishermen to explore options and evaluate impacts of management alternatives, and facilitating access to other government and private sector programs to support the design and implementation of a catch share option.

3. **Inform and educate stakeholders so that they can best participate in the design and implementation of catch share programs.** NOAA will work with Councils, states, Sea Grant and its Marine Advisory Service, and other partners to provide information and training to raise awareness and increase understanding about the advantages and disadvantages of catch share programs; to improve general catch share literacy in communities, including fishermen, regulators and the public; and to increase stakeholder engagement in the development and review of catch shares.

4. **Coordinate data collection, research and performance monitoring of catch share programs.** NOAA will partner with Councils, states, Interstate Commissions and other collaborators to ensure appropriate data are collected, relevant research is conducted, and catch share performance metrics are derived to support the Councils in their consideration, adoption, operation and evaluation of catch share programs

CATCH SHARE POLICY IMPLEMENTATION

Starting with FY 2011, an annual plan to implement the NOAA Catch Share Policy will be developed in association with NOAA's fiscal year budget appropriation. Based on approved spending levels, the plan will include the specific actions that NOAA believes will ensure catch share programs have the highest likelihood of success. NOAA will work diligently with its partners to use this support to effectively carry out the policy's guiding principles.

GLOSSARY OF TERMS

Catch Share Program

Not defined in MSA. A catch share program is a generic term used to describe fishery management programs that allocate a specific percentage of the total allowable fishery catch or a specific fishing area to individuals, cooperatives, communities, or other entities. It includes more specific programs defined in statute such as Limited Access Privileges (LAP) and Individual Fishing Quotas (IFQ). It also includes Territorial Use Rights Fisheries (TURFs) that grant an exclusive privilege to fish in a geographically designated fishing ground. The recipient of a catch share is directly accountable to stop fishing when its exclusive allocation is reached.

Community Development Quota

Quota set-aside by the North Pacific Council in support of community and economic development as authorized under Section 305(i) of the MSA establishing the Alaska and Western Pacific Community Development Programs. The Western Alaska Community Development Quota (CDQ) Program allocates a percentage of all Bering Sea and Aleutian Islands quotas for groundfish, prohibited species, halibut, and crab to eligible communities. The purpose of the CDQ Program is to (i) to provide eligible western Alaska villages with the opportunity to participate and invest in fisheries in the Bering Sea and Aleutian Islands Management Area; (ii) to support economic development in western Alaska; (iii) to alleviate poverty and provide economic and social benefits for residents of western Alaska; and (iv) to achieve sustainable and diversified local economies in western Alaska.

Dedicated Access Privilege (DAP)

Not defined in MSA. Defined in the U.S. Commission on Ocean Policy Report as "…a novel form of output control whereby an individual fisherman, community, or other entity is granted the privilege to catch a specified percentage of the total allowable catch." Includes individual fishing quotas (IFQ), individual transferable quotas (ITQ), fishing community quotas, fishing cooperatives, and other geographically based programs that give an individual or group dedicated access to the fish within a specific area of the ocean.

Fishing Community

[MSA 16 USC 1802(17)] A community which is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew and United States fish processors that are based in such community.

Fishing Cooperatives

Not defined in MSA; defined under the Fishermen's Collective Marketing Act (FCMA) of 1934 (15 USC 521). A group comprised of "persons engaged in the fishing industry as fishermen, catching, collecting, or cultivating aquatic products, or as planters of aquatic products on public or private beds, that may act together in association, corporate or otherwise."

Individual Fishing Quota (IFQ)

[MSA 16 USC 1802(23)] A Federal permit under a limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by a person. Such term does not include community development quotas as described in section 305(i).

Individual Transferable Quota (ITQ)

Not defined in MSA. An individual fishing quota (IFQ) program where privileges can be transferred subsequent to initial allocations.

Limited Access Privilege

[MSA 16 USC 1801(26)] A Federal permit, issued as part of a limited access system under section 303A to harvest a quantity of fish expressed by a unit or units representing a portion of the total allowable catch of the fishery that may be received or held for exclusive use by a person. This includes individual fishing quotas, but does not include community development quotas as described in section 305(i).

Limited Access System

[MSA 16 USC 1802 (27)] A system that limits participation in a fishery to those satisfying certain eligibility criteria or requirements contained in a fishery management plan or associated regulation.

Regional Fishery Association

[MSA 16 1802(14)] An association formed for the mutual benefit of members to meet social and economic needs in a region or sub-region; comprised of persons engaging in the harvest or processing of fishery resources in that specific region or sub-region or who otherwise own or operate businesses substantially dependent upon a fishery.

Sector

Not defined in MSA. A sector is defined here as a distinct subset of fishery participants who share similar characteristics, such as a group of commercial, recreational or subsistence fishermen and, unless further qualified, includes the allied shore side entities they engage with. It does not equate to the use of the regulatory term sector or "sector allocation" in the New England Council groundfish management plan.

Territorial Use Right Fishery

Not defined in the MSA. A single fisherman (or firm, organized group, community, etc.) having an exclusive privilege to fish in a geographically designated fishing ground. [Note: Even though the term itself uses the word "right" the catch share programs in this policy are defined in terms of a granting of a privilege, not a property right.]

Background Documents for Council Cost Recovery Discussion.

NMFS has yet to develop specific guidance for implementing cost recovery programs.

For purposes of Council discussion excerpts from the following documents are provided:

*Magnuson-Stevens Fishery Conservation and Management Act

(http://www.nero.noaa.gov/sfd/MSA_amended_20070112_FINAL.pdf)

*The Design and Use of Limited Access Privilege Programs

(http://spo.nwr.noaa.gov/tm/tm86.pdf)

*Individual Fishing Quotas: Management Costs Varied and Not Recovered as Required

(http://www.gao.gov/new.items/d05241.pdf)

Magnuson Act Cost Recovery Requirements

The Council needs to further develop the methodology for identifying costs to be recovered through fees and specify a program of fees. Section 303A(e) of the MSA states that

(e) COST RECOVERY.—In establishing a limited access privilege program, a Council shall—

(1) develop a methodology and the means to identify and assess the management, data collection and analysis, and enforcement programs that are directly related to and in support of the program; and

(2) provide, under section 304(d)(2), for a program of fees paid by limited access privilege holders that will cover the costs of management, data collection and analysis, and enforcement activities.

Under Section 304(d)(2)(A) of the Magnuson-Stevens Act, the Secretary of Commerce (Secretary) is authorized to collect a fee, not to exceed 3 percent of the ex-vessel value of fish harvested, to recover the costs directly related to themanagement, data collection and analysis, and enforcement of IFQ programs . Section 304(d)(2)(A) states:

109-479

(2)(A) Notwithstanding paragraph (1), the Secretary is authorized and shall collect a fee to recover the actual costs directly related to the management, data collection, and enforcement of any—

(i) limited access privilege program; and

(ii) community development quota program that allocates a percentage of the total allowable catch of a fishery to such program.

(B) Such fee shall not exceed 3 percent of the ex-vessel value of fish harvested under any such program, and shall be collected at either the time of the landing, filing of a landing report, or sale of such fish during a fishing season or in the last quarter of the calendar year in which the fish is harvested.

(C)(i) Fees collected under this paragraph shall be in addition to any other fees charged under this Act and shall be deposited in the Limited Access System Administration Fund established under section 305(h)(5)(B).

(ii) Upon application by a State, the Secretary shall transfer to such State up to 33 percent of any fee collected pursuant to subparagraph (A) under a community development quota program and deposited in the Limited Access System Administration Fund in order to reimburse such State for actual costs directly incurred in the management and enforcement of such program.

Section 305(h)(5)(B) directs the funds collected back to the fishery from which the fees were collected from. Section 305(h)(5)(B) states:

> (B) There is established in the Treasury a Limited Access System Administration Fund. The Fund shall be available, without appropriation or fiscal year limitation, only to the Secretary for the purposes of—
>
> (i) administering the central registry system; and
>
> (ii) administering and implementing this Act in the fishery in which the fees were collected. Sums in the Fund that are not currently needed for these purposes shall be kept on deposit or invested in obligations of, or guaranteed by, the United States.

The Design and Use of Limited Access Privilege Programs

Lee G. Anderson and Mark C. Holliday, Editors

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

NOAA Technical Memorandum NMFS-F/SPO-86
November 2007

Enforcement Conclusions

The above is a brief summary of the basics of the design and operation of an enforcement program for a LAP managed fishery. Clear communication with NOAA Fisheries during the Council's construction of the LAP plan will help to ensure that the peculiarities of the fishery which might affect enforcement are known to NMFS and that the nuances of enforcement that might affect compliance in a particular fishery are known to Council members.

While the simple diagram in Figure 6 provides a picture of what must be done in a LAP monitoring program, the details can be very complex. Also, there is likely a non-linear relation between the complexity and the costs of implementation and operation of a system, and also its ability to actually get the job done. The best plan is the one that gets the job done (where success is defined as meeting the demands of the MSA and accomplishing the management objectives of the plan) in the most efficient manner, not the one that simply has the lowest enforcement costs. If there are two ways to achieve a management objective, however, then choose the one that costs less to implement and enforce if all else is equal.

As Councils develop multiple LAP programs there may be economies of scale in implementing LAP enforcement programs. The personnel and the system that are used to implement one can often, with only moderate cost increases, handle more. This is only true, of course, if the designs of the actual LAP programs are similar. Therefore, it makes good sense, both from the participant's point of view, and from an implementation perspective, to minimize the differences between different LAP programs to the greatest extent possible.

Costs for enforcement activities are recoverable under Section 303A(e), but the MSA places a cap on recovery at 3-percent of the ex vessel value of fish harvested. While the costs of enforcing the Alaska Halibut/Sablefish program are under that cap, this will not necessarily be the case for all future LAP programs, especially those with smaller TACs and lower market prices. The objective to design an efficient enforcement program holds regardless of the 3-percent cap, but it is especially compelling where a proposed LAP approach pushes enforcement costs above the cap. In times of limited appropriated funding, it may be difficult to the find the necessary funds to bridge the gap, and therefore other LAP design alternatives may need to be considered.

2. Cost Recovery

The MSA mandates that all LAP programs have a cost recovery program. Both the Secretary and the Councils are given specific tasks. The Secretary is directed by Section 304(d)(2)(A) to collect a fee that will be used to cover certain specified costs:

> (2)(A) Notwithstanding paragraph (1), the Secretary is authorized and shall collect a fee to recover the actual costs directly related to the management, data collection, and enforcement of any—

(i) limited access privilege program; and

(ii) community development quota program that allocates a percentage of the total allowable catch of a fishery to such program.

(B) Such fee shall not exceed 3 percent of the ex-vessel value of fish harvested under any such program, and shall be collected at either the time of the landing, filing of a landing report, or sale of such fish during a fishing season or in the last quarter of the calendar year in which the fish is harvested.

(C)(i) Fees collected under this paragraph shall be in addition to any other fees charged under this Act and shall be deposited in the Limited Access System Administration Fund established under section 305(h)(5)(B).

(ii) Upon application by a State, the Secretary shall transfer to such State up to 33 percent of any fee collected pursuant to subparagraph (A) under a community development quota program and deposited in the Limited Access System Administration Fund in order to reimburse such State for actual costs directly incurred in the management and enforcement of such program.

Currently, cost recovery is occurring in the halibut/sablefish, crab rationalization, and red snapper IFQ programs (see the Appendix 1 spotlights on these programs). Cost recovery is not yet in place for wreckfish and the surf clam/ocean quahog IFQ programs. Given the mandate concerning the necessity and type of cost recovery program, Councils do not face any substantive design choice questions here as they do with other aspects of LAP program design: cost recovery must be implemented. However, knowledge of the theory and the operation of cost recovery programs is useful background for overall LAP program development.

With respect to the role of the Councils in developing LAP programs, the MSA states in Sections 303A(e) :

(e) COST RECOVERY.—In establishing a limited access privilege program, a Council shall—

(1) develop a methodology and the means to identify and assess the management, data collection and analysis, and enforcement programs that are directly related to and in support of the program; and

(2) provide, under section 304(d)(2), for a program of fees paid by limited access privilege holders that will cover the costs of management, data collection and analysis, and enforcement activities.

The object of the fee program is to cover at least part of the costs of management (recall the 3-percent cap on cost recovery imposed by the MSA). The Councils are given the task of developing the methodology and means to assess the costs that are directly related to and in support of the program. But what exactly does that mean? While specific guidelines may be developed in a future cost-recovery rulemaking, some general principles can be described right now.

Incremental Costs

The relevant costs to recover are the incremental costs, i.e., those costs that would not have been incurred but for the IFQ program (NMFS, 2003). Conceptually, measuring these costs involves a "with and without" comparison, i.e., What is the cost of running the management program for the specified fishery under the *status quo* regime, and what is the cost of running the management program under the LAP program? The difference is the incremental costs attributable to implementing the LAP program. The two justifications for limiting recoverable costs to incremental costs are:

(1) Since the issue is to find the funds to cover the costs of adding LAP programs, then the real problem is to cover incremental costs.

(2) To minimize the disincentives for Councils and their constituents as they consider replacing non-LAP programs with LAPs, it makes sense to have participants in LAP programs only pay for the costs that are added because of the LAP program itself. For example, stock assessment costs will be required no matter what type of program is used. Given the current law, it is not possible to have participants in non-LAP programs pay for stock assessments. Therefore, having participants in LAP programs pay for stock assessment while non-LAP participants don't pay would be unfair and prejudice the Council's and industry's preference of LAPs as a management option.

The incremental cost issue was examined in a recent GAO study on cost recovery. (GAO, 2005). GAO pointed out that "actual costs" could alternatively be interpreted as the full costs of managing the fishery under consideration: every dollar that is spent on managing the fishery should be counted. In its response NOAA indicated that the current methodology of defining recoverable costs as those that are directly attributable to the implementation of an IFQ program was the correct interpretation of the MSA. The GAO did not go so far as to suggest that full costs should be recovered. Rather, they said that if Congress wanted full costs to be recovered, it should clarify the cost recovery fee provision of the Act to call for full costs to be recovered. The MSA reauthorization passed by Congress in December 2006 made no such change.

Interestingly, the Administration's MSA reauthorization bill provided additional cost recovery provisions for Congress to consider. The bill included a proposal for cost recovery in non-LAP fisheries, added science activities as a recoverable cost, and raised the potential cost recovery rate to 15 percent. Congress did not adopt any of these provisions, providing additional evidence that the existing cost recovery authorities and practices were sufficient.

The reason for a with-without comparison rather than a before-after comparison is to keep all other factors equal. This becomes tricky for any currently unmanaged fisheries. Here the baseline to use as a reference for the cost comparison is the estimated cost of basic data collection and analysis, management and enforcement under a traditional non-LAP method for that fishery. This means that if the *status quo* management system is incomplete or insufficient to meet current objectives and just happens to be adjusted concurrent with the introduction of the LAP program, the costs of satisfying the insufficiency should not be attributable to the LAP program. For example, a newly managed fishery would need some form of a stock assessment regardless of whether the management strategy was a LAP or non-LAP approach. The stock assessment cost would not be a recoverable cost in this case. Another example is the general recognition that observers are necessary in a multi-species fishery managed with a non-LAP program. However, consider the case where observers were not part of the initial management program and a decision was subsequently made to require observers. Even though the decision to introduce observer might coincide with the start of a LAP program, the observer costs would not necessarily be eligible for cost recovery unless they were directly related to and in support of the LAP program. The determinations of what costs are recoverable will be extremely important to the industry and the agency, and regulatory guidance may be necessary to promote consistency and equity.

Measurement of Costs

The actual measurement of the incremental costs that are directly related to operating a LAP program can be quite difficult. The costs are generated by NOAA Fisheries programs and these data need to be shared with the Councils.. Experience with the existing LAP cost-recovery programs and the attributes of the larger operational systems in which they operate are worth exploring. The following discusses some of the issues related to LAP cost recovery as guidance and for possible adoption by other programs as Councils design new LAP programs.

The longest-standing U.S. LAP cost recovery protocol is the one that has been established in the NMFS Alaska Region for the halibut/sablefish IFQ program. Here the administrative staff have instituted an automated process whereby the time spent by employees on different categories of work are recorded and tabulated. The direct program cost categories include labor, rent/utilities/overhead, travel, printing, contracts, supplies, equipment, and other expenses. The Alaska Region is set up to capture time allocation information of all personnel who work on management or enforcement of any IFQ program. These costs are collected from various NMFS offices (Sustainable Fisheries Division, Restricted Access Management Program, Office of Law Enforcement, Office of Management and Information, and Office of Administrative Appeals).

In addition, costs from collaborators in Alaska's IFQ management program are tallied as well (including NOAA's Office of General Counsel, the International Pacific Halibut Commission, Pacific States Marine Fisheries Commission, Alaska Department of Public Safety and the Alaska Department of Fish and Game). These costs are added to the NMFS costs that are documented to be attributable to IFQ operations. The actual procedure is more complicated than this simple explanation. However, since there are procedures that will account for the measurement of the appropriate costs within the existing NOAA financial management system, it may not be necessary for the Councils to develop a process on their own.

All LAP programs will also likely require an infrastructure in addition to cost recovery that includes the administrative information systems needed to manage quota catch accounting, permit issuance, transfers of both permanent quota share and annual quota amounts. As more LAP programs around the country come online in the next few years, NMFS wants to minimize unnecessary redundancy in LAP infrastructure and seek economies of scale. Currently the Alaska Region has made the most significant investment in the infrastructure needed to operate LAP programs and has the most experience, having spent spent millions of dollars on these systems since the mid-1990s. They have created efficient web-based landings reporting system in conjunction with the State of Alaska and have well-documented procedures and systems to monitor and manage the administrative side of their LAP programs. The Southeast Region's red snapper IFQ program that began in January 2007 was able to adopt many ideas and procedures already in use in Alaska. Thus, even with the diversity of regional LAP programs likely to be designed in the future, there will be many opportunities to share common infrastructure components.

Promoting common infrastructure capabilities to support LAP management will be desirable for several reasons. (Note this is not referring to the Council program design elements, as no single LAP program exists that will satisfy every FMP requirement. Rather, it is the administrative and management infrastructure components common to all LAPs that can benefit from open and flexible designs.) For example:

1. Since planning and development costs leading up to a LAP are not cost recoverable, lack of appropriations for independent infrastructure development could constrain adoption of LAP strategies. Thus, an agency-wide capability may be more cost effective and result in more LAP programs than otherwise possible. Rather than duplicating LAP operational system design and implementation FMP by FMP, designing flexible systems for re-use by multiple LAP programs would be less costly. Taking advantage of economies of scale will allow more LAPs to come on-line should they be selected as the preferred alternative by Councils. Moreover, several preliminary estimates for operational costs of potential LAP programs have exceeded the 3-percent cap, some by as much as 300 percent. Thus, efficient design and shared use of existing infrastructure by multiple LAPs would help close this gap.

2. An agency-wide infrastructure capability will help regions implement a new LAP more quickly by taking advantage of a robust, well-designed, secure system that can be deployed much faster than individual new, ground-up development. Framework LAP programs that have received OMB regulatory, data quality and information collection approvals and are part of programmatic LAP Environmental Impact Statements may be possible and their use may expedite the approval timeline.

3. The risk of significant problems in LAP implementation due to a failed system development effort or deployment of a flawed system will be greatly reduced. Training and system support functions can also be distributed reducing single point of failure vulnerabilities. Separate regional systems developed in isolation could result in redundant and incompatible systems that would be contrary to agency and administration policies on

program efficiency and effectiveness. For example, a LAP is defined as a permit in the MSA, and all permits must comport with NMFS policy establishing a common national permits system. A common LAP infrastructure also would help establish and meet a set of consistent objectives for permit customer service, security, and compliance with other applicable laws and regulations.

Were Councils to consider designing LAP systems in a coordinated manner at the outset, more effective use of limited funds to satisfy infrastructure needs would result in more Councils having LAPs as a viable management option. This would require extensive collaboration among management partners within a region such as the coordination of the design of LAP programs for different species or fisheries within a FMP or among one or more Councils' FMPs. Collaboration and planning by NMFS and the Councils across regions to design compatible infrastructure systems for different FMPs could similarly result in cost effective LAP programs that enhance attainment of multiple Council or ecosystem-based objectives for management.

Computation of Cost Recovery Fee

Given the language in the law, the determination of the fee is a straightforward calculation. With the 3-percent cap on the amount that can be collected, the determination of the percentage fee can be expressed as follows. Let DPC be the direct program costs measured using the process described above. Let P equal the average landings price over the season, and TAC equal the total allowable catch. The product of P times TAC is the value of the harvest. The percentage fee is then:

$$\%Fee = 100*DPC/[P*TAC] \text{ or 3-percent whichever is lower}$$

In the Halibut/Sablefish program, the fee has always been less than the cap of 3-percent. However, preliminary calculations concerning other likely LAP candidate fisheries suggest that this will not always be the case. The Gulf of Mexico Red Snapper IFQ program, the Gulf of Mexico Reef Fish program, and the Central Gulf of Alaska Rockfish Pilot Program when fully implemented are expected to have management costs greater than the 3-percent that can be recovered.

As discussed in Section 2, Councils do have an option to use a portion of the funds collected in the mandated cost recovery program to create a loan program to assist certain entities purchase LAPs (this is not required but an option). In the Alaska Crab Rationalization Program (See 50 CFR 680.44), the Council had the unique authority for this fishery to propose an adjustment to the fee formula to at least partially compensate for funds directed to a Limited Access Privilege Purchase Program. Let L represent the percent of fees the Council can choose to allocate to the loan program, where according to the law, L can vary from 0 to 0.25. The adjusted formula would be:

$$\%Fee = 100*DPC/\{[P*TAC]*[1-L]\} \text{ or 3-percent whichever is lower.}$$

In the normal case where L is equal to .25, this is equivalent to multiplying the basic equation by 1.33. Ignoring the 3-percent cap for the moment, this means that if 25 percent of everything that is collected is given to the loan fund, there will still be enough collected to cover the direct program costs. Of course the cap does remain, and so this will only work when the basic calculated fee is less than 3-percent.

The Councils may also want to evaluate the process chosen to collect the fees since it can have important implications for the business operations of the participants. Councils may wish to include certain specifications in the plan after considering the convenience and cash flow needs of participants and the existing procedures fishermen use for selling and getting paid for their fish. For example, if settlements are received monthly and not at the conclusion of each trip, it will likely be necessary to schedule fee payments accordingly (See for example the differences in cost recovery in the IFQs for red snapper and the halibut sablefish in Appendix 1).

The timing of fee collection is also important with respect to enforceability. Having a program where the fees are withheld by the fish buyer will likely be more convenient for the participant and may also result in a higher compliance rate.

This raises another issue with respect to the timing of fee collections. The fee can not be determined until the average price is set or at least approximated. It may be necessary to let the fishery go for several months without collecting fees to get an estimate of P, which could then be used for the rest of the year. At the end of the year it may be necessary to make adjustments. Whatever process is ultimately chosen must be sensitive to the business practices of the fisheries being managed, and they vary considerably around the country.

3. *Monitoring and Data Collection*

As introduced in the discussion of enforcement, the effective management of LAP programs requires development and implementation of a highly accurate, timely, and well-documented catch accounting system. These systems provide information that go beyond just enforcement needs. Although the system could theoretically be a manual reporting mechanism, it is almost certain that monitoring and collecting sufficient data for managing a LAP program will require an electronic reporting system. The MSA specifies in 303A(c)(1)(H) that a LAP program must include the use of observers or an electronic monitoring system.

> (c) REQUIREMENTS FOR LIMITED ACCESS PRIVILEGES.—
> (1) IN GENERAL.—Any limited access privilege program to harvest fish submitted by a Council or approved by the Secretary under this section shall—
> .
> .
> (H) include an effective system for enforcement, monitoring, and management of the program, including the use of observers or electronic monitoring systems;

United States Government Accountability Office

GAO

Report to Congressional Requesters

March 2005

INDIVIDUAL FISHING QUOTAS

Management Costs Varied and Were Not Recovered as Required

GAO
Accountability ★ Integrity ★ Reliability

GAO-05-241

Both New Zealand and Canada have devolved some of their IFQ management responsibilities to industry. In New Zealand, the government has devolved responsibility for certain services to industry, including maintaining the quota share database, registering quota shares, monitoring landings data for compliance with quota limits, and issuing permits, while retaining responsibility for developing standards, specifications, and regulatory proposals. In Canada, the government provides a baseline of fishery management services, but it has devolved to industry the responsibility for hiring and paying for government-certified at-sea and dockside observers to monitor fishing activities. Canada also gives industry associations the option to select and pay the government for additional fishery management services through service contracts. Canada currently has 15 service contracts with industry, including several involving IFQ programs.

Conclusions

IFQ programs bring special benefits to quota holders, who receive exclusive access to a public trust resource. With the enactment of the Sustainable Fisheries Act, NMFS is required to recover actual costs directly related to the management and enforcement of all IFQ programs. While NMFS recovers some costs for the halibut and sablefish IFQ program, it does not recover any management costs for the surfclam/ocean quahog and wreckfish IFQ programs. Such a situation not only raises concerns regarding noncompliance with the law, but it also raises concerns about fairness because a select group of beneficiaries is receiving exclusive access to a public resource without compensation to the public. Also, quota holders in the halibut and sablefish fisheries are paying fees, while quota holders in the surfclam/ocean quahog and wreckfish fisheries are not.

Moreover, because NMFS does not provide guidance on how to estimate costs for IFQ programs, each organizational unit with IFQ-related costs uses its own methodology to estimate recoverable costs. Without a standard cost estimation process, NMFS has no credible basis for knowing whether it is charging the appropriate fees and whether it is recovering all required costs. Finally, since the Magnuson-Stevens Act does not define "actual costs directly related to the management and enforcement" of an IFQ program and NMFS has interpreted the term to mean incremental costs, NMFS may be recovering fewer costs than the Congress intended. Another interpretation, that is, a "full cost" approach, could result in greater cost recovery by NMFS.

Matter for Congressional Consideration

If the Congress would like NMFS to recover other than incremental costs, it may wish to clarify the IFQ cost recovery fee provision of the Magnuson-Stevens Act.

Recommendations for Executive Action

To comply with the cost recovery requirements of the Magnuson-Stevens Act, we recommend that the Secretary of Commerce direct the Director of NMFS to take the following two actions:

- implement cost recovery for all IFQ programs and
- develop guidance regarding which costs are to be recovered and, when actual cost information is unavailable, how to estimate these costs.

Agency Comments and Our Evaluation

We provided a draft copy of this report to the Department of Commerce for review and comment. We received a written response from the Under Secretary of Commerce for Oceans and Atmosphere that includes comments from the National Oceanic and Atmospheric Administration (NOAA). Overall, NOAA stated that our report was well researched and presented, and was responsive to the specific request made by the Congress.

NOAA agreed with our recommendation to implement cost recovery for all IFQ programs. NOAA agreed that the IFQ cost recovery provision of the Magnuson-Stevens Act applies to all IFQ programs. NOAA said that it would work with the Mid-Atlantic and South Atlantic Fishery Management Councils on adding cost recovery to the surfclam/ocean quahog and wreckfish IFQ plans. It also said that the costs of collecting these fees should be taken into account when determining whether cost recovery is required in a particular IFQ fishery. To that end, NOAA suggested that we may want to recommend that the Congress consider adding a rule exempting IFQ programs from the cost recovery requirement if those costs fall below some reasonable threshold. Since the scope of our work did not include an evaluation of the cost recovery provisions of the Magnuson-Stevens Act, we believe that it would be premature to make a recommendation to the Congress at this time.

NOAA also agreed with our recommendation to develop guidance regarding which costs are to be recovered and, when actual cost information is unavailable, how to estimate these costs. Specifically, it said that NOAA will develop guidance on how to identify activities directly attributable to an IFQ program and on how the costs associated with these activities can be measured.

NOAA also raised some questions about specific issues covered in the report. For example, NOAA suggested that we should have looked at the net benefits of IFQ programs and the circumstances and general cost recovery policies in selected foreign countries, but doing so was beyond the scope of our work. Also, NOAA believes that the recovery of incremental costs is more consistent with the requirements of the Magnuson-Stevens Act than an interpretation requiring the recovery of full costs. Because the act does not define "actual costs directly related to the management and enforcement" of an IFQ program, which we believe can be interpreted in more than one way, our report suggests that the Congress may wish to clarify this provision if it would like NMFS to recover other than incremental costs. NOAA's specific comments and our detailed responses are presented in appendix IV of this report.

As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 30 days from the report date. At that time, we will send copies of this report to interested congressional committees, the Secretary of Commerce, and the Director of the National Marine Fisheries Service. We will also provide copies to others upon request. In addition, the report will be available at no charge on the GAO Web site at http://www.gao.gov.

If you or your staff have any questions about this report, please call me at (202) 512-3841 or Stephen Secrist at (415) 904-2236. Key contributors to this report are listed in appendix V.

Anu K. Mittal

Anu K. Mittal
Director, Natural Resources
and Environment

GROUNDFISH ADVISORY SUBPANEL REPORT ON IMPLEMENTATION OF AMENDMENT 20 (TRAWL RATIONALIZATION) AND AMENDMENT 21 (INTERSECTOR ALLOCATION) AS WELL AS SCOPING OF PRIORITIZED TRAILING AMENDMENTS

The Groundfish Advisory Subpanel (GAP) considered four major trailing amendments and offers detailed comments below. We also discussed several corollary issues that we wish to highlight for the Council.

MAJOR TRAILING AMENDMENT ISSUES

1. Amendment 21 to replace Amendment 6:

The GAP feels Amendment 21 was meant to supersede Amendment 6. National Marine Fisheries Service's (NMFS) rejection of that portion of the rationalization package will unintentionally cause hardship for limited entry fixed-gear fishermen while benefitting open access fishermen. The GAP asks the Council to remedy this problem. In addition, NMFS' interpretation effectively traps Exempted Fishing Permit (EFP) fish within the set-asides, preventing other fisheries from accessing that fish in the event an EFP is not enacted. The GAP requests the Council to remedy this issue.

2. Severability of the mothership catcher-vessel catch history/endorsements from the permits:

Approximately 22 more permits were allotted mothership (MS)/catcher vessel (CV) history than currently participate. In general, the allocations to those permits are very small. Without the ability to sever that quota from the permit, a current participant will have to buy the permit in order to have permanent access to the catch history. The cost of buying the permit will be disproportionate to the value of the catch history. Severability will also allow those who wish to participate the ability to retain their permit to harvest non-MS individual quota to sell their catch history rather than choosing to join a co-op, fish in the non-co-op fishery or just strand their fish. Severability is supported by the MS sector and is consistent with the goals of Amendment 20.

3. Cost recovery:

The GAP recognizes the complexity surrounding development of the cost recovery program. In part due to that complexity, and in part in order to maintain as open a process as possible, we firmly believe that the Council should play a strong and active role in the development of the cost recovery program.

The GAP notes that cost recovery should be limited to the incremental costs of administering the trawl rationalization program. The appropriate formula to determine incremental costs should be new costs that wouldn't occur *but for the transition to individual quota (IQ)/coop management* reduced by any cost savings due to the transition to IQ/coop management. This should include savings, if any, in reduced modeling for the trawl fleet, reduced enforcement needs over time etc. One existing cost which the GAP feels needs to be taken into account when calculating incremental costs of the program is the amount required to provide for the current observer coverage rate in the fleet. The GAP is adamant that that cost be reduced from each sector's incremental cost accordingly.

Furthermore, we request that NMFS provide the public a sector-by-sector breakdown of the costs of current management as well as the costs of the trawl rationalization program. This will make cost recovery calculations and program development more transparent.

Finally, the GAP believes each sector should only pay for that portion of the increased costs attributable to that sector.

4. Safe harbors: The GAP spent hours in discussion about an exception to control caps (safe harbors) for community fishing associations, risk pools, and quota used as collateral for financing. We referred to Agenda Item H.5.a. Attachment 1, "Fall 2010 Scoping Information on Trailing Actions," as well as the *Burden et al* document to help inform our discussion.

Risk Pools

The GAP's principal concern with the transition to IQ management is the availability, or lack thereof, of overfished species. The lack of quota for constraining stocks may force many fishermen or entire sections of coast off the water early and may prevent some fishermen from starting to fish at all. Based on that concern, the GAP stated in its September comments on this issue that risk pools should be given the highest priority for trailing amendment development. However, based on discussions with NMFS staff and NOAA General Counsel (GC), the GAP no longer believes a trailing amendment is necessary to facilitate viable risk pools.

The GAP's interest in pursuing a trailing amendment for risk pools emerged from a concern that many of the contractual risk pool designs under consideration by the fleet could implicate the strict "control" language adopted by the Council if the amount of fish in the risk pool exceeded the caps. More specifically, it seems that a functioning risk pool may require both incentives and penalties to ensure limited numbers of constraining stocks are avoided, and those incentives and penalties may need to run beyond a single year to ensure the best compliance. While there is no "control" limit on quota pounds (a separate vessel limit applies to QP), there was an assumption that multi-year contracts on quota pounds would impute control over quota share thereby implicating the limit.

The GAP now understands, after discussions with NOAA GC and NMFS staff, that voluntary, multi-year contracts, solely for the purpose of avoiding overfished and other constraining stocks will not *automatically* implicate the control rule. We further understand that whether the control rule is triggered will depend on the specific nature of the contract, but that many of the avoidance concepts (i.e. contractual arrangement of information sharing, incentives, and penalties) under consideration by the fleet may *NOT* trigger the control rule, even if those contracts run for more than one year. We also understand that NMFS and GC staff are available to discuss specific risk pool contracts for determination of control cap compliance. The GAP appreciates NMFS' and NOAA GC's willingness to engage in these discussions.

If the GAP's understanding is correct, we believe no trailing amendment is needed for risk pools at this time, which would free up time in the schedule to consider other important potential trailing and regulatory amendments (artifacts from previous management) such as trawl gear restrictions, shoreside whiting season dates and so on.

CFAs

Regarding CFAs, the following paragraph captures the essence of our lengthy discussion:

> CFAs can form now, under existing laws and regulations for any number of purposes that could help stabilize communities. There is no need for Council intervention to allow an exception to the carefully developed quota share control caps.

The GAP recognizes a lot of time and effort went into putting the IQ program together and the control rules were part and parcel to that process. Any exception would be a detriment and create a loophole that could get "stretched" later on. Regarding an exception for overfished species (OFS), the GAP believes those levels are liberal enough and any multiplication of those levels is unnecessary. Caps for target species are also liberal and, in almost every instance, those levels are greater than the historic landings of any individual participant.

Given these arguments, we believe there was little reason to comment on the CFA straw man/options on Page 10 in the scoping document. Regardless, the following are highlights from the pertinent points related to CFAs that came up during the GAP's discussion:

- <u>CFAs, risk pools and financing institutions should be considered three separate and unique entities.</u> Each have their own goals and missions to accomplish. However, the GAP recognizes there could be some overlap in, say, a CFA also acting as a risk pool. In other words, a CFA could participate in a risk pool, but in order to have a risk pool, you don't need to have a CFA. Risk pools primarily would be formed to deal with issues related to overfished species.
- <u>Adaptive management program pounds should NOT be inextricably linked to CFAs.</u> Establishment of a CFA should not be a vehicle to obtaining more quota shares/quota pounds through adaptive management as some in the non-trawl sector may desire.
- <u>Council action on CFAs is not necessary at this time.</u> As we've stated before, if you take away the quota share rule exception, there is no need for the council to consider CFAs so they should be taken off the council's calendar. The fleet – with one exception – has not come forward with any interest in CFAs. The lone individual who expressed interest in CFAs is planning to develop a CFA within the existing caps. Moreover, only a small number of communities have expressed interest in being a part of or forming CFAs. The GAP does acknowledge that these communities are seeking larger control caps for CFAs. However, during the first couple of years of the TIQ program, the GAP as a whole feels that the Council should concentrate on trailing amendments that will make the program work as efficiently as possible – this does not include CFAs at this time.
- <u>Maintaining community infrastructure:</u> The GAP recognizes one of the assumed goals of CFAs would be to maintain a community's fishing infrastructure, such as the fleet, processor(s), ice plant(s), buyer(s) and related businesses, and that community's viability in the greater community (state, region, etc). Those goals could be achieved using other mechanisms, such as removing or modifying artifacts from the traditional management regime: the shoreside whiting season dates (i.e., there are higher value/small volume markets available earlier in the season and a change could allow fishermen and processors to access these), rockfish conservation area (RCA) boundaries, allowing gear modification, etc. Those goals could also be realized through the formation of a CFA

within the existing caps. That is not an insignificant amount of quota and could be used to incentivize additional landings accommodating many vessels.

- CFA design: A definition of a CFA should not be so restrictive as to exclude people who want to form them around one or more ports, a community, a processor, a business, etc. Furthermore, support for CFAs and formation of its organizational structure should come from regional trawl fishery participants, and not be mandated by the Council.
- Providing opportunity: One member of the GAP suggested CFAs with a safe harbor exception to the control caps under carefully articulated circumstances are merely a tool to provide flexibility and opportunity to traditional trawl communities that may have concerns about maintaining landings and infrastructure after the transition to the IQ program. The safe harbor would not grant communities quota, but would rather allow them to acquire it in a willing buyer willing seller transaction. As stated above, the GAP strongly rejects this argument and believes the control caps are adequate should communities wish to purchase quota to help maintain landings.

Financial institutions using QS as collateral: The GAP believes that banks and other financial institutions should be authorized to hold QS as collateral in excess of control caps as specified in the regulations. Without that ability, many lenders will be unwilling to make loans to fishermen based solely on the QS asset. However, the GAP believes that those lenders should not be able to direct the use or disposition of the QS or QP other than by way of sale in the case of a foreclosure action. This situation needs attention, because the regulations as presently drafted allow for control of the QS/QP by the lending institution.

COROLLARY ISSUES

- Halibut individual bycatch quota (IBQ): In addition to some of the overfished species, halibut is likely to be one of the biggest constraints on the trawl fleet. The GAP believes that an emergency rule is needed to fix the allocation to the trawl sector for 2011, and a trailing amendment to implement a longer term fix for 2012 and beyond should also be developed. We agree with the WDFW report that for 2011, the 130,000 pounds of halibut allocated to the trawl fleet should be expanded from the dressed "legal" fish it represents, to round weight total mortality. The amount of halibut available to the trawl fleet based on the WDFW report (but using the .62 figure for legal/sublegal expansion based on poundage rather than number of animals), roughly 279,000 pounds of total mortality, is a significant reduction over where we would have been had Amendment 21 not been implemented, and so in that sense does not harm the other sectors. More importantly, it is very close to a 50% reduction in trawl halibut mortality, which is what the GAP feels was the original intent of the motion limiting the trawl sector to the lesser of 130,000 pounds or 15% of the CEY. To summarize, the GAP believes that the intent of the motion was to limit the trawl sector to 130,000 pounds of dressed, legal halibut so expanding that number to incorporate round weight and sublegals is appropriate. This calculation is shown in figure 1 below.
- Usage limits (vessel caps): During a discussion of risk pools with Mariam McCall and Frank Lockhart, a hypothetical situation arose independent of the CFAs and risk pools discussion that: If a fisherman is in deficit and curing that deficit would put the fishermen over the usage limit/vessel cap, the fishermen will be in a penalty situation with no potential remedy. It was suggested an exception be made to cover the deficit but then the vessel would be required to stop fishing for the year – and it would not incur a violation. Obviously, this is more acute with regard to OFS rather than target species and raised the

question of whether an exception to this rule would create an incentive to fish above the vessel cap. The GAP agreed it merits more discussion as trailing amendments move forward.

- Alternatives to risk pools and CFAs: The GAP considered another option, quota banks, to remedy the problem of overfished species. This option would require that for low-abundant species, all of the fish would be put into one large pool held by NMFS. Quota holders could withdraw from the bank as OFS were encountered. However, there would be the option of three disincentives for doing so: a cost per pound, time off the water or a frozen vessel account. While the GAP arrived at no conclusion on this, it was put forth as an alternative to a risk pool that would not require a quota share exception. Several members of the public strongly objected to this proposal desiring to keep NMFS out of managing quota and several members of the GAP echoed that objection. If the Council decides to move forward with this concept, the GAP believes this is something that should be further developed by the TIQ committee.

- Third-year pass-through of AMP pounds: The GAP agreed that a third-year pass-through of AMP pounds makes sense, since it will take the first couple of years to get all the kinks ironed out of the TIQ program and this would ease the transition.

- Other items the Council should consider: The GAP believes dropping CFAs and risk pools from the list of trailing amendments will free up time in the Council schedule to work on other critical regulatory and trailing amendments that are needed in the short term to help the trawl rationalization program meet its objectives. Referencing two items from the September 2010 meeting, Agenda Item 1.6.a, Supplemental Attachment 3, "Table – initial list of potential trailing actions and possible calendar," and Agenda Item 1.6.b, Supplemental GAP report, we have commented on other potential trailing actions that could be moved ahead in the timeline:

    - Reducing observer costs – Next to risk pools, observer costs are one of the primary concerns of the fleet when considering the transition to catch shares management. Electronic monitoring has the potential to reduce costs and also provides significant benefits in terms of flexibility. Observer pools, which may be used to keep observer costs down within a port, require a strict rotation and may prevent some fishermen from fishing when they wish to do so. That problem goes away with electronic monitoring. For those reasons, EM needs to be considered and we ask that NMFS develop guidance on what an EM system would need to do from a management, enforcement, and science standpoint to be authorized for use.

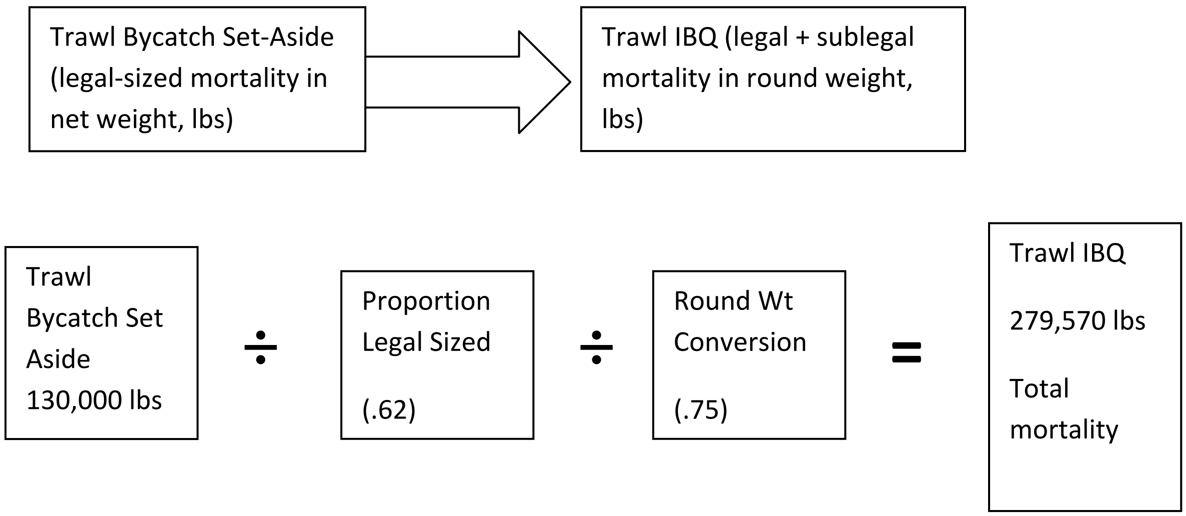
    - Removing trip limit management artifacts – Some regulations that made sense under traditional management are now a detriment to the fishery from both a conservation and economic standpoint. For example, gear restrictions on things like mesh size and net shape are less important now that we have individual accountability, but those restrictions will hamper the ability of the fleet to develop innovative gear modifications that could help keep constraining species out of the net. Likewise, the limitation on processing at sea, including things like freezing product on board the vessel is an artifact that could prevent the realization of better market prices and better quality overall. Another example of a modification to existing rules that could yield benefits is the start date to the shoreside whiting season. We recommend a change from June 15 to May 15 to provide more flexibility to time landings to market, avoid constraining stocks etc. A final example of an artifact from the previous management system that should be revisited is the permit stacking rules. Those rules prevent holding an LE fixed permit and a trawl permit on board at the same time and meanwhile limit the number of transfers authorized per year. This will result in unnecessary and inefficient constraints on fishermen and at the same time create headaches for the NMFS permit office. This prohibition is one of the chief obstacles to an automated declaration system. The GAP believes fixing these artifacts would be relatively straightforward taking only a two meeting process and requiring relatively little in the way of staff and Council time. The GAP also wishes to direct the Council's attention to a speech given by NMFS Regional Administrator Will Stelle at the Santa Rosa quota holder workshop (video of the speech is available at www.westcoasttrawlers.net/node/69). Mr. Stelle highlighted the need to move away from command and control management to new gear types, seasons, product forms and so on to maximize revenue from the fishery while meeting our conservation objectives. That laudable goal will be hindered if we don't modify outdated regulations preventing those advances. The TIQ committee could be tasked with further development of changes to these rules.

- QP deficits lasting more than 30 days – The GAP continues to believe that if you can cover this at any point during the year you should not be penalized. The penalty is in having to quit fishing until you could find the quota. The practical reality is that some fishermen may be penalized for being unable to find 1 or 2 pounds of an overfished species in exceedingly tight market conditions.

Implementation Update Regarding Observer Cost Reimbursement

The GAP and members of the trawl fleet were under the impression that NMFS intended to reimburse 90% of observer costs during the first year of the program. We have recently learned that the intent is now to reimburse only for "sea days". This formulation of the reimbursement concept could have significant unintended consequences for trawl fishermen, particularly during periods of poor weather when it may blow for weeks at a time. The fishermen will likely need to contract with observer companies to keep observers in port and pay for that time, but if they don't fish due to no fault of their own will not be reimbursed. We urge the Council and NMFS to reconsider this issue. There were several other reimbursement protocols under consideration by the PSMFC which, if adopted instead of the current formulation, could create additional incentives to keep observer costs down while avoiding this problem. One idea would be to have the PSMFC establish observer reimbursement accounts for each fishermen based on a days at sea or percent allocation of the quota formula.

Figure 1: Conversion of trawl set aside to halibut IBQ



PFMC
11/07/10

Table. Initial list of potential trailing actions and possible calendar for each assuming that not all issues are addressed at the same time (if a substantial number of issues are addressed at the same time, the calendars would need to be adjusted to avoid bottlenecks). Shaded months indicate periods of Council activity.

	2010	2011					2012						2013		
Topic	Nov	Mar	Apr	Jun	Sep	Nov	Jan 1	Mar	Apr	Jun	Sep	Nov	Jan 1	Possible Lead Entity(ies)	Possible Analytical Support
1 Cost Recovery			PPA	FPA			Impl							NMFS	NMFS & Cncl Staff w/Contractor
2 Adaptive Management Program (AMP) Quota Shares (QS)				PPA	FPA					Impl *				Agency Workgroup (NMFS & States)	Coucnil Staff
3 QS/Quota Pound (QP) Control Rules, Including Community Fishing Associations, Risk Pools, & Financing				PPA	FPA					Impl				GAC or Policy Workgroup w/Legal Assistance	Council Staff w/Contractor
4 Reducing Observer Costs (Education, Alternative Technologies, & % Coverage)				PPA	FPA								Impl	Workgroup (NWR,NWSC, Enf,Cncl)	Council Staff w/NWR/NWSC
5 Yelloweye QS Allocation			PPA	FPA						Impl				GAC or Council/GAP	GMT &/or Council Staff w/Contractor
6 Widow QS Reallocation			PPA	FPA						Impl				GAC or Council/GAP	GMT &/or Council Staff w/Contractor
7 Halibut Trawl Allocation Adjustment		PPA		FPA			Impl **							Council/GAP	GMT &/or Council Staff w/Contractor
8 QP Deficits Lasting More Than 30-days		PPA		FPA					Impl					Council/GAP	Council Staff
9 Mothership Processing Ownership Limits		PPA		FPA					Impl					Council/GAP	Council Staff
10 Permit stacking		PPA		FPA					Impl					Council/GAP	Council Staff
11 Double Filing of Co-op Reports		PPA		FPA					Impl					Council/GAP	Council Staff
12 Severability of Catch History From Mothership/Catcher Vessel Endorsement		PPA		FPA					Impl					Council/GAP	Council Staff w/Contractor

PPA = Council selects preliminary preferred alternative. **FPA** = Council selects final preferred alternaive. **Impl** = Target implementation date.

* Implementation assuming proposals for use of AMP quota must be evaluated for 2013-14 specs. If a formulaic approach is used, implementation may come later in the year.

** If implementation is to be later than the start of 2012, any reallocation can be handled through the biannual specifications process.

Control and vessel limits (from H.5.a attachment 1)

Species Category	Vessel Limit (Applies to all QP in a Vessel Account, Used and Unused)	Vessel Unused QP Limit**	QS Control Lim
Nonwhiting Groundfish Species	3.2%		2.7%
Lingcod - coastwide	3.8%		2.5%
Pacific Cod	20.0%		12.0%
Pacific whiting (shoreside)	15.0%		10.0%
Pacific whiting (mothership)	30.0%		20.0%
Sablefish			
N. of 36° (Monterey north)	4.5%		3.0%
S. of 36° (Conception area)	15.0%		10.0%
PACIFIC OCEAN PERCH	6.0%	4.0%	4.0%
WIDOW ROCKFISH *	8.5%	5.1%	5.1%
CANARY ROCKFISH	10.0%	4.4%	4.4%
Chilipepper Rockfish	15.0%		10.0%
BOCACCIO	15.4%	13.2%	13.2%
Splitnose Rockfish	15.0%		10.0%
Yellowtail Rockfish	7.5%		5.0%
Shortspine Thornyhead			
N. of 34°27'	9.0%		6.0%
S. of 34°27'	9.0%		6.0%
Longspine Thornyhead			
N. of 34°27'	9.0%		6.0%
COWCOD	17.7%	17.7%	17.7%
DARKBLOTCHED	6.8%	4.5%	4.5%
YELLOWEYE	11.4%	5.7%	5.7%
Minor Rockfish North			
Shelf Species	7.5%		5.0%
Slope Species	7.5%		5.0%
Minor Rockfish South			
Shelf Species	13.5%		9.0%
Slope Species	9.0%		6.0%
Dover sole	3.9%		2.6%
English Sole	7.5%		5.0%
Petrale Sole	4.5%		3.0%
Arrowtooth Flounder	20.0%		10.0%
Starry Flounder	20.0%		10.0%
Other Flatfish	15.0%		10.0%
Pacific Halibut	14.4%	5.4%	5.4%

* If widow rockfish is rebuilt before initial allocation of QS, the vessel limit will be set at 1.5 times the control limit.

** A limit on the amount of unused QP that may be in a vessel account at any one time.

GROUNDFISH MANAGEMENT TEAM REPORT ON IMPLEMENTATION FOR AMENDMENT 20 (TRAWL RATIONALIZATION) AND AMENDMENT 21 (INTERSECTOR ALLOCATION) AS WELL AS SCOPING OF PRIORITIZED TRAILING AMENDMENTS

The Groundfish Management Team (GMT) discussed the calendar for trailing actions on the trawl catch shares (Agenda Item H.5.a, Attachment 4, November 2010), and has the following comments and considerations.

The GMT recommends finalizing any decisions regarding Amendment 21 supercedence of Amendment 6 prior to the biennial specifications and management measures (SPEX) process, beginning in November 2011. If this is delayed such that it overlaps the SPEX process it would cause considerable confusion. There was similar confusion this year from having the Amendment 23 process overlaid on the SPEX.

Likewise, the GMT recommends the Council consider moving Topic 3 (QS/QP Control Rule Safe Harbor (CFAs, Risk Pools, & Financing) to a higher priority so that the topic may be addressed as soon as possible. The GMT notes that formation of risk pools that are not constrained by control limits may reduce the likelihood of exceeding the allocation or annual catch limit (ACL) of overfished species. Hence, removing control limits from risk pools allow the catch share program to be conducted more efficiently and with less chance of needing additional management measures. Furthermore, when the Council addresses this trailing amendment, the GMT suggests that Risk Pools might be considered separately from community fishing associations (CFAs), because the two initiatives could be allowed for different purposes (i.e. a CFA could be formed for purposes of community stability independent of the need for a risk pool). It may be simpler to consider the issues surrounding risk pools separately from the considerations associated with formation of CFAs rather than in combination.

We would also like to remind the Council as they develop the prioritized list of trailing actions that there is the potential need to respond to emergent issues in the first few years of the trawl rationalization program. For example the total mortality of longnose skates was exceeded the OY in 2009 and it is unclear if additional measure will be required under the individual quota (IQ) program to prevent this happening again. Similarly, if there is difficulty in implementing tools (as discussed above) to prevent exceeding the allocation or ACL of overfished species the Council may need to develop trailing amendments to address the issue.

GMT Recommendations:

1. **Finalize Amendment 21 supercedence of Amendment 6 prior to the biennial specifications and management measures (SPEX) process beginning in November 2011.**
2. **Prioritize Topic 3 (QS/QP Control Rule Safe Harbor (CFAs, Risk Pools, & Financing) to a higher priority so that the topic may be addressed as early as possible.**
3. **Consider the need to develop trailing amendments in the early years of the program in addition to those already identified.**

PFMC
11/7/10

TRIBAL COMMENT ON CHANGES TO THE HALIBUT ALLOCATION TO TRAWL FISHERIES

There are thirteen tribes with treaty rights to Pacific halibut. As with all other directed fisheries for halibut in the PFMC's Catch Sharing Plan (CSP), our allocation is reduced by the amount estimated for, among other things, trawl bycatch. This bycatch has been generally declining in recent years, and we hope to see that trend accelerate as envisioned under trawl rationalization. However, recent reductions in the Area 2A (i.e., all waters off Washington, Oregon, and California) Total Allowable Catch (TAC) have highlighted the need to reduce bycatch to offset restrictions on the directed fisheries. As such, directly allocating a portion of the Constant Exploitation Yield (CEY) that equates to near status quo levels of bycatch is not acceptable. It has been our understanding throughout the Council's Amendment 20 and 21 processes that what was proposed and ultimately adopted represented a significant reduction in bycatch with incentives to continue those reductions for the rationalized trawl fishery.

It is also not appropriate to alter the amount of individual bycatch quota (IBQ) available to the trawl fleet in response to alternate interpretations of how the set aside should be calculated. This is not consistent with Council deliberations to date, nor would it be a fair or transparent way to conduct a public process.

In adopting the IBQ system the Council recognized the need to account for both legal and sublegal fish. From the final preferred alternative:

> Consideration was given to requiring IBQ only for legal sized halibut. However, this option would not encourage harvesters to avoid sub-legal sized halibut and would not do as good a job of achieving the objective of reducing bycatch and bycatch mortality.

The PFMC was also aware of the problems with tying IBQ to CEY. The IPHC even suggested that IBQ be represented as a portion of recent average bycatch. They also noted the confusion of converting from net pounds to round pounds (Agenda Item G.3.c, Supplemental IPHC Report, March 2009).

Likewise, in June 2009 under clarifications and trailing actions for IQ it was noted that 130,000 lbs of legal-sized bycatch would not be much of a change from status quo and that in order to make some progress toward bycatch reduction, the cap must apply to both legal and sublegal (from the June 2009 minutes):

> Mr. Anderson spoke to the issue of the allocation of halibut to cover bycatch in the trawl fishery. The WDFW recommendations were developed with the intent of achieving a reduction in the bycatch and bycatch mortality of halibut, similar to what resulted from the halibut individual bycatch quota (IBQ) established for the Canadian trawl fishery. There are a number of ways that individual trawl vessels might achieve these reductions. In April the Council approved the lesser of 15 percent of the constant exploitation yield (CEY) or 130,000 lbs. With respect to the possibility that the CEY might increase, capping the trawl fishery at 130,000 lbs, Mr. Anderson noted that there was very little correlation between the CEY and total bycatch. With respect to the issue of legals and sublegals, because size at age has dramatically decreased over the decade and most males never get to legal size, they felt that looking at legals and sublegals was the appropriate way to assess bycatch. The 130,000 lbs value is about 15 percent of 870,000 lbs. The 2004-2007 average legal size mortality is 154,000 lbs. At 130,000 lbs, you would not make much progress. However, if you look at the total (legals and sublegals) and leave out one outlier, you find that the 130,000 lb cap represents a 55 percent reduction in bycatch mortality of legal size halibut. Mr. Anderson enumerated a number of methods available to trawlers to achieve such a reduction and noted the importance of individual

> fishermen accountability for this approach. Individual fishers that do a good job of handling fish on deck and avoid high halibut bycatch areas will benefit.

In its final action under Amendment 21, the Council decided to "allocate" 15 percent of the Area 2A total CEY of Pacific halibut to the LE trawl sector, not to exceed 130,000 for the first four years and not to exceed 100,000 pounds for years five and beyond of the trawl rationalization program (see Section 4.4.4 of the Amendment 21 FEIS).

The allocation for IBQ can be revisited every two years as currently specified. There is no need to undergo the time and effort to revise the amount available to the trawl fleet a year early. One of the stated goals of the IQ program is to reduce bycatch. For halibut, which is taken off the top prior to allocation among all 2A sectors, including treaty tribes, it is vital that the bycatch of halibut start being reduced. This is especially true in light of recent steep reductions in the TAC for our area. Relaxing the performance measure adopted by the Council early in the implementation of the rationalized fishery is the wrong approach. The Council had several opportunities to consider this issue, and in fact, have already raised the overall allocation from what was originally proposed. The example from British Columbia shows that with individual accountability, significant reductions to halibut mortality can be realized. It does not make sense to second guess previous decisions that have already been deemed and clarified based on changing perceptions of how successful the fleet can be at avoiding halibut bycatch.

CHRISTINE O. GREGOIRE
Governor

STATE OF WASHINGTON
OFFICE OF THE GOVERNOR
P.O. Box 40002 • Olympia, Washington 98504-0002 • (360) 753-6780 • www.governor.wa.gov

October 27, 2010

The Honorable Gary Locke, Secretary
U.S. Department of Commerce
1401 Constitution Avenue NW
Washington, DC 20230

Dear Secretary Locke:

On behalf of Washington State, I am writing to express my strong support for the Pacific groundfish trawl rationalization plan recently approved by the Department of Commerce and awaiting implementation funding under the National Oceanic & Atmospheric Administration (NOAA) Catch Shares Initiative.

This catch share program is an effective way to sustain our fisheries and is supported by West Coast communities and the Pacific Fishery Management Council. However, as you know, the program needs to be fully funded to be successful, including support for on-board observers.

While there is uncertainty in the funding that the NOAA Catch Share Initiative will receive from Congress for FY 2011, there is clear Congressional support for this program. Working within the funding level provided by Congress, I also understand that the Department of Commerce has discretion about how much funding can be directed to this program. I urge you to provide full funding to the Pacific groundfish rationalization plan with FY 2011 appropriations and full support for this program as you develop your budget for the coming fiscal year.

Thank you for your consideration and for your continued support.

Sincerely,

Chris

Christine O. Gregoire
Governor

cc: Phil Anderson, Director, Washington State Department of Fish and Wildlife

Agenda Item H.5.c
WDFW Report
November 2010

WASHINGTON DEPARTMENT OF FISH AND WILDLIFE REPORT ON THE CALCULATION OF HALIBUT INDIVIDUAL BYCATCH QUOTA FOR THE TRAWL RATIONALIZATION PROGRAM

In June 2009, the Washington Department of Fish and Wildlife (WDFW) proposed, and the Council unanimously adopted, the following motion (with amendments underlined) on Amendment 21 Intersector Allocation and the halibut individual bycatch quota (IBQ) component of the trawl rationalization program:

> The trawl mortality limit for legal and sublegal halibut is set at 15% of the Area 2A Total Constant Exploitation Yield not to exceed 130,000 lbs, each year, for the first 4 years of the trawl rationalization program, and not to exceed 100,000 lbs beginning in the 5th year of the program. This total bycatch limit may be adjusted through the biennial management process. Halibut IBQ will apply on an individual basis and will be based on halibut bycatch mortality, not on total halibut catch.

As described, the purpose of this motion was to:

- Set a trawl halibut sector quota amount for the first four years of the program that acknowledges the reduction in the Total CEY for 2A in recent years and provides an incentive for halibut bycatch reduction and reduction of discarded mortality;

- Provide a mechanism to adjust the trawl sector bycatch quota (up or down) through the biennial management process; and

- Promote individual accountability for halibut bycatch by applying an individual mortality rate to halibut discards.

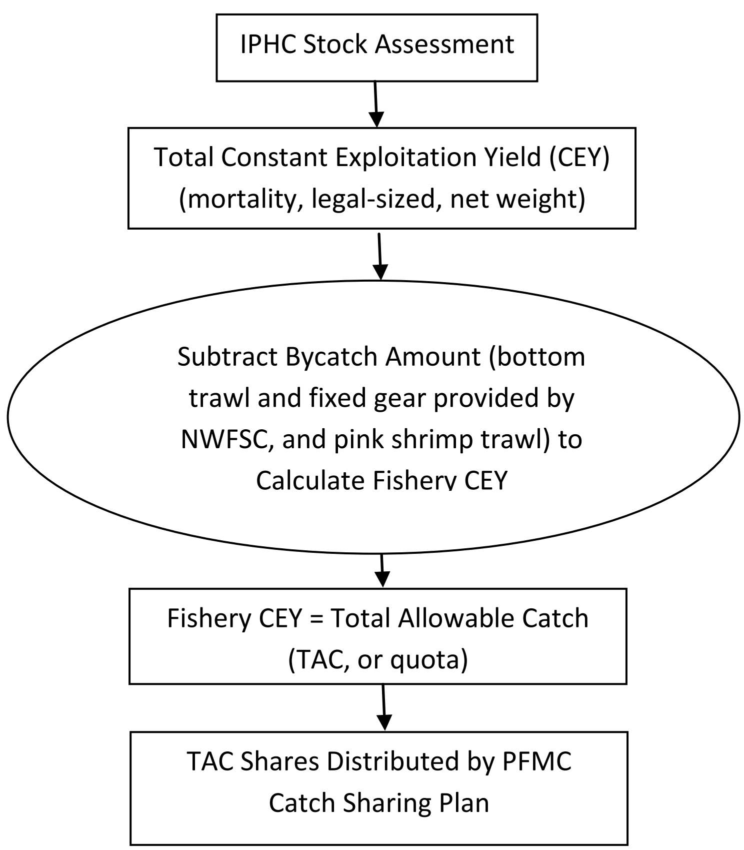
At the September 2010 meeting, we noted that there was considerable confusion on the part of some members of the Council and the Groundfish Advisory Subpanel (GAP) as to how the halibut IBQ quota pounds would be calculated for distribution to the trawl fleet under rationalization. This confusion is understandable given that not everyone is familiar with how the halibut quotas are calculated by the International Pacific Halibut Commission (IPHC).

Figure 1 is a flow chart that describes how the Area 2A halibut quota is calculated by IPHC. IPHC conducts an annual survey and produces a stock assessment that establishes the Total CEY for each management area. Importantly, the CEY is expressed in terms of the mortality of legal-sized halibut in net weight. From the Total CEY, IPHC subtracts the Council's best estimate of halibut bycatch.

The Council annually receives a report from the Northwest Fisheries Science Center (NWFSC) that includes post-season bottom trawl and fixed gear halibut bycatch estimates. The NWFSC's estimates are derived from the West Coast Groundfish Observer Program (WCGOP) data. Bycatch estimates are for mortality of all halibut (legal and sublegals); mortality rates for the trawl fleet are based on the condition of the released fish, whereas a fleetwide mortality rate for fixed gear (provided by IPHC) is applied. For trawl, WCGOP observers measure some of the halibut brought aboard, so an estimate of the proportion of legal-sized fish can be calculated.

The NWFSC post-season estimate is forwarded to IPHC and is combined with an estimate of pink shrimp trawl bycatch to produce a total 2A bycatch amount. The 2A bycatch amount is subtracted from the Total CEY (i.e., it comes off the top) to produce the Fishery CEY, or quota, for the following season, which is allocated among the different directed and incidental fisheries in accordance with the Council's Catch Sharing Plan; therefore, reducing the amount of trawl bycatch results in a higher quota for the directed fisheries.

Figure 1. IPHC halibut quota calculation for Area 2A.



Because the trawl sector will be held to a quota under the trawl rationalization program, the Council decided to use this preseason quota (i.e., the 130,000 pounds), rather than the post-season estimate, as the trawl bycatch amount that would be subtracted from the Total CEY in calculating the Area 2A quota beginning in 2011.

In September, there was also concern expressed by members of the Council and the GAP that the amount set aside for the trawl sector was considerably less than the amount of halibut harvested by the trawl sector in recent years. We believe this to be a misunderstanding as well. As with the confusion over the IBQ calculation, this misunderstanding seems related to the two different units of measurement to discuss the amount of the trawl set aside and the amount of IBQ. The trawl set aside that is subtracted from the IPHC's Total CEY (i.e., the 130,000 pounds) is expressed in mortality of legal-sized halibut in net weight. The amount of the halibut IBQ, on the other hand, is expressed in mortality of legal <u>and sublegal</u> sized halibut in <u>round</u> weight.

To determine how the amount of the trawl set aside (i.e., the 130,000 pounds) relates to the amount recently harvested by the trawl sector, we must first convert the amount harvested by trawl, as provided in the annual NWFSC report (expressed in total mortality for legal <u>and sublegal</u> sized halibut), into the same unit of measurement as the set aside amount (legal-sized mortality only). The legal size for halibut is 32 inches, which is approximately 81 cm. The steps for this calculation are outlined in Figure 2.

Figure 2. Steps to convert NWFSC estimate into IPHC unit of measurement to compare the NWFSC's estimate for 2009 with the trawl set aside.

NWFSC Estimate (legal + sublegal mortality in round weight, mt) → Trawl Bycatch Amount (legal-sized mortality in net weight, lbs)

NWFSC Estimate	X	Proportion Legal Sized	X	Net Wt Conversion	X	mt to lbs Conversion	=	Trawl Bycatch Amount
251 mt		36%		75%		2204.6		149,406 lbs

For this example, we used the most recent estimate of trawl discard mortality (legal and sublegal combined) for 2009, which was 251 mt. We also used 36% as the proportion of the trawl total mortality in the NWFSC report that was estimated to be legal-sized (Agenda Item D.2.b, NMFS Report, September 2010). This percentage was derived by calculating the proportion of halibut sampled that were longer than 80 cm, as the length data were grouped into 5 cm intervals. We also used 75% as the conversion factor for round weight to net weight, as was provided to us by IPHC in testimony at the September meeting.

We note that the trawl bycatch amount increased from 209 mt in 2007 to 251 mt in 2009. However, even when we use the higher value from 2009 (149,406 pounds), the difference between that amount and the amount set aside for trawl (130,000 pounds) is 19,406 pounds, which is only a 13% reduction.

Next, to determine how the trawl set aside amount (i.e., the 130,000 pounds) translates into the amount of halibut quota pounds available for the IBQ program, we must first convert the set aside into the trawl rationalization unit of measurement (see Figure 3).

Figure 3. Steps to convert trawl set aside into trawl IBQ unit of measurement.

Trawl Bycatch Set Aside (legal-sized mortality in net weight, lbs) → Trawl IBQ (legal + sublegal mortality in round weight, lbs)

Trawl Bycatch Set Aside	÷	Proportion Legal Sized	÷	Round Wt Conversion	=	Trawl IBQ
130,000 lbs		0.36		0.75		481,482 lbs

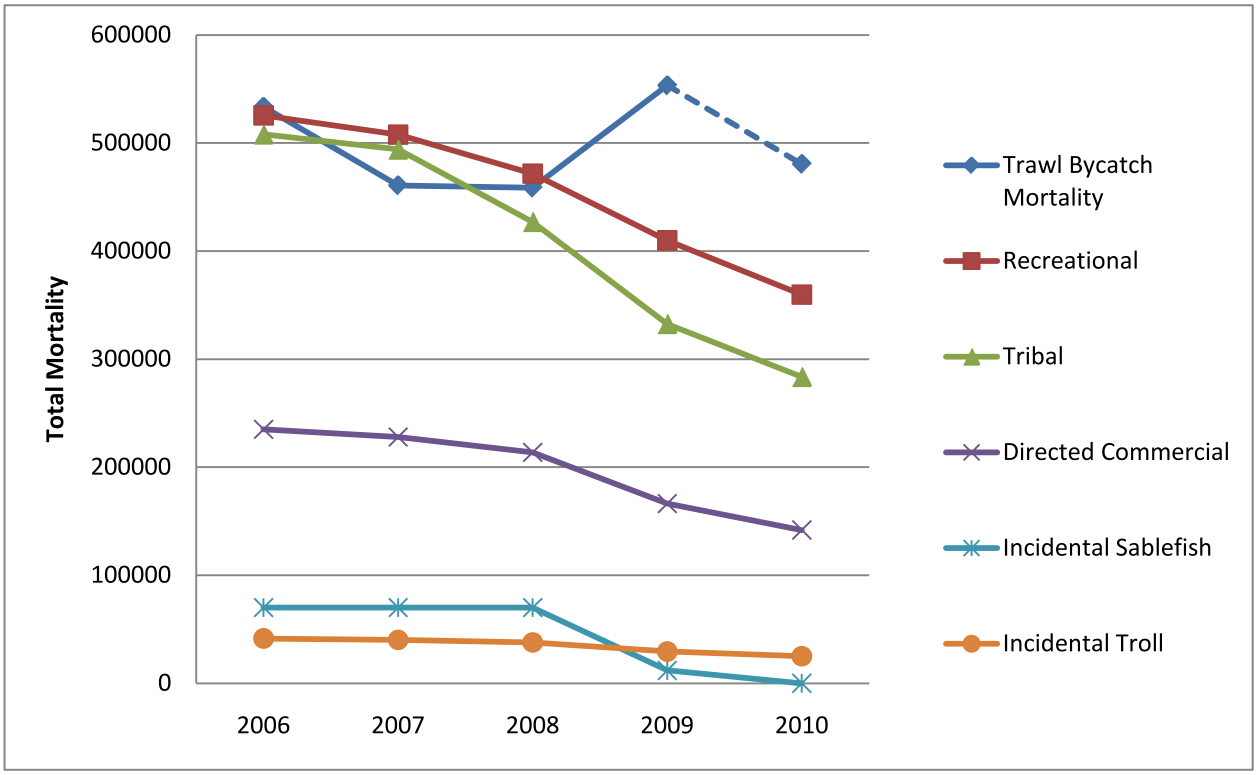
Therefore, the overall amount of the trawl sector IBQ pounds is 481,482 pounds, each year, for the first four years of the program. This number is 71,873 pounds, or 13%, less than what is estimated to have been caught in 2009 (i.e., 251 mt, which equals 553,355 pounds).

The Council also set aside 10 mt of halibut to account for the catch occurring in the at-sea whiting fishery and bottom trawl fishery south of 40 degrees, 10 minutes. If we subtract the 10 mt set aside from the trawl sector total, there would be 459,436 pounds distributed to the individual permit holders under the trawl rationalization program.

To put the 13% reduction into perspective, the trawl bycatch mortality has remained relatively stable for the past five years, except for the increase in 2009, whereas the Area 2A quota (after the bycatch has been subtracted) has declined each year for the past five years. All other Area 2A halibut fisheries (tribal, commercial, incidental, and recreational) have experienced reductions in the range of 30-100%. The recreational quota has been reduced by 30%, the tribal, directed commercial, and incidental troll quotas have been reduced by about 40%, and the incidental sablefish quota was zero in 2010 (see Figure 4).

WDFW prepared this report to explain our rationale behind our proposed amount of halibut to be set aside for trawl IBQ and we hope that the Council and GAP find it informative and helpful. Given that the quotas for the non-trawl fisheries in Area 2A have been significantly reduced, WDFW recommends the Council keep the trawl halibut set aside at 130,000 pounds, which equates to 481,482 halibut IBQ pounds, in place for the first four years of the program. As described previously, this amount may be adjusted through the biennial management process.

Figure 4. Trawl halibut bycatch mortality for 2006-2009, and sector halibut quotas for 2006-2010. The 2010 projection for trawl represents the initial trawl IBQ amount.



WEST COAST SEAFOOD PROCESSORS ASSOCIATION
1618 SW First Avenue
Suite 318
Portland, OR 97201
503-227-5076

Mr. Mark Cedergreen, Chairman
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, OR 97220

Dear Mr. Chairman:

On behalf of the West Coast Seafood Processors Association (WCSPA), I am providing the following comments regarding potential trailing actions to Amendments 20 and 21 of the Pacific Coast Groundfish Fishery Management Plan.

We appreciate the fact that – with one exception – the Council has tentatively adopted the same priorities we recommended at the September meeting. As we noted then, modification of the halibut individual bycatch quota (IBQ), cost recovery, and modifications of control caps to allow pooling of bycatch species are all necessary and important to make sure the trawl groundfish fishery can continue to operate after January 1, 2011.

Regarding IBQ, there was concern expressed at the September meeting that a modification would result in changing the halibut catch-sharing plan. The IBQ is currently set at a level *below* the bycatch amount currently assumed to be taken or discarded by the trawl fishery. We believe that raising the IBQ by some modest amount would still keep trawl catch below the current assumed level and provide savings which could be applied to other gears and directed fisheries. We encourage the Council to continue analyzing this option so the trawl fishery and other halibut users can mutually benefit.

Regarding cost recovery, the law requires fees be collected to offset program costs. Although the proposed federal budget – if enacted by Congress – provides transition funding to get the trawl rationalization program up and running, we cannot depend on the vagaries of the Congressional appropriations process, nor should we be creating a subsidized fishery. Establishing a mechanism to collect program fees is a crucial step.

Regarding control cap modifications, ideally the Council should examine both the stringent ownership and control rules and the caps – and we believe the Council will eventually recognize the need to do so. However, in the immediate term, there is need for an option that will allow fishermen with low overfished species allocations to pool those allocations as a type of self-insurance program so they can continue to access healthy species. Without that capability, we are concerned that during the first year or two of the program, most fishing will be terminated well before the end of the year. Because of the importance of maintaining Pacific groundfish market share in the face of increasing imports of competing species such as *Pangasius sp.* and tilapia, we need to as much as possible keep a year-round fishery.

In designing risk pools, as these programs have come to be known, we need to recognize that most will be developed in a single port and sometimes around a single processing plant. Each port has different concerns and different requirements, so there needs to be maximum flexibility in risk pool design and operation. We suggest the Council provide some minimum side-boards to ensure a risk pool is not used simply to evade the control caps, but otherwise allow them to be created based on the needs of the participating fishermen. For example, the Council should consider the following:

- setting a limit on how far above the current control cap a risk pool can go in pooling species;
- requiring a formal agreement among risk pool participants that spells out the rules for joining, participating in, and leaving a risk pool and clearly identifies who is in charge and who accepts responsibility;
- making clear that pooling of some species does not constitute joint control of or interest in quota shares / quota pounds for species that are not being pooled (e.g., if five fishermen agree to share their canary rockfish quota, that does not mean that all of their other quota species are considered shared and thus potentially in violation of even relaxed control caps); and
- allow agreements among risk pools (e.g., if the Astoria pool wants to trade yelloweye rockfish quota pounds with the Ilwaco risk pool, it can be accomplished).

Once the rules are established, we believe the Council can rely on the creativity of the fishing industry to make the program work.

In regard to community fishing associations, we continue to be concerned that the Council not develop an exception to control caps in order to accommodate the needs of one particular community and its current partners. Several communities on the west coast have lost fishing capacity and supporting infrastructure as a result of the trawl permit buyback; we have yet to see them come before the Council and ask for an exemption from control caps. It is unclear to us what the Council intends to accomplish by allowing establishment of community associations that are exempt from the strict rules that every other person must follow. If the desire is to ensure the continued flow of fish into a particular community or set of communities, this could have been accomplished in a variety of ways, including some the Council specifically rejected when approving Amendment 20. We continue to advocate that consideration of community fishing associations be given much lower priority.

A more simple action, and one we believe will lead to a wider suite of benefits for a larger number of fishery participants, is to further streamline the groundfish regulations and do away with those that were based on trip limit management. If the intent of the trawl rationalization program is to encourage different fishing patterns and behaviors, then fishermen must be given the opportunity to engage in those behaviors. For example, the Council still bans the use of large footrope trawls shoreward of the Rockfish Conservation Area. If a fisherman can demonstrate conservation benefits from using a large footrope trawl in that area, why not allow it? Should the Rockfish Conservation Area still apply to limited entry trawl fishing? Are there changes in trawl mesh size or configuration or net construction that will allow more efficient fishing? Should we no longer have a separate whiting season or should the starting dates change? We suggest the Groundfish Advisory Subpanel and the Groundfish Management Team be given the task of examining current regulations and recommending a set of regulatory changes to the Council that can be incorporated either under the trailing amendment process or in the next set of biennial management specifications.

Thank you for the opportunity to comment. While some of our members have concerns about the implementation of Amendments 20 and 21, we intend to continue working with the Council to ensure as much as possible that we will maintain a steady and robust groundfish fishery.

Sincerely,

Susan Chambers
Deputy Director

OCEANcompanies

OCEAN COMPANIES

1804 N. Nyhus
Westport, WA 98595

T 360.268.2510
F 360.268.1917
info@keepgraysharborfishing.com

www.keepgraysharborfishing.com

October 15, 2010
Dr. Don McIsaac
Executive Director
Pacific Fishery Management Council
7700 NE Ambassador Place, Suite 101
Portland, Oregon 97220-1384

Dear Dr. McIsaac,

If there is one thing everyone involved with west coast groundfish can agree upon it's that we have very little idea about the immediate impact that the January 1 catch share program is going to bring to the many stakeholders involved in this industry. Processors, fishermen, coastal communities, environmental NGOs and government agencies can only take their best shot at imagining what the first year under catch shares is going to look like.

That said, it doesn't mean we shouldn't be aggressively pursuing multiple management options in both the near and long-term management of this program to ensure the most benefits for all interests and the least collateral damage.

From our perspective at the Ocean Companies, including the independent business units of Ocean Gold Seafoods, Ocean Protein, Ocean Cold and Ocean Express, if nothing else gets resolved at the November council meeting we need to at least address the following items:

1. The severability of risk pools from the discussion of community fishing associations. Having spoken to a number of the fleet who traditionally deliver fish to us, we believe it is critical that we be given as much flexibility as possible within the new system to try to make some form of a cooperative pool work, both in terms of managing bycatch hot spots and managing the transfer of bycatch species. Tying up that ability with the need to define a CFA flies in the face of the ability to execute the fishery.

2. Control caps within risk pools need to be addressed. There must be an exception to control caps within a risk pool so that we can effectively manage the distribution of both risk within the constraints of bycatch and influence behavior for determining the best places to fish and the best places to avoid.

3. Multiyear contracts for risk pools are also critical. No management of risk pools will work if we are constrained to one-year contracts. We need to have the ability to develop multi-year contracts with the boats and processors involved in any risk pool in order to enforce the bylaws of the risk pool. What happens in one year directly affects the following years, and we need the ability to ensure any overages incurred within the development of a risk pool can be recouped by participants in following years. A multiyear contract is essential to be able to do that, or else there simply will be no teeth in the agreement and no incentive to maintain or abide by the rules.

4. Seasonal equity. We need to start our seasons across all sectors at the same time. Under a catch share program, we no longer need to have different start dates. This serves only to confuse the fishery, particularly as it relates to any kind of coop arrangements that may or may not develop with boats that fish both shoreside and offshore.

Quite frankly, while the consolidation of the fleet is a known outcome of catch shares (as evidenced in every other fishery where it has been implemented), we believe the integrity of this program is contingent upon our ability to reduce as much fall out as possible at the outset, providing opportunities for fishing vessels to continue to fish, when it makes the most sense, enhancing necessary behavioral changes, and investing in new fishing practices.

We cannot remove our ability to manage risk as an industry in the short term because of constraining ideas of control caps, contracts and an even more nebulous idea of what a Community Fishing Association may or may not be in 2012 and beyond. The fact of the matter is that in a handful of weeks following this council meeting, we will be living in a new management world that aims to provide better economic opportunity and better management of the species. We cannot do that without the option to pursue risk pools outside of the restraints currently in place.

We look forward to an engaging discussion on this topic, along with many others pursuant to the start of this program.

Thank you in advance for your consideration.

Sincerely yours,
Heidi Happonen

TEMPLATE FOR COUNCIL ACTION

<u>Council Action</u>:

1. **Provide guidance on moving forward on those issues that the Council has identified as an immediate priority for trailing action. Guidance should address:**
   a. **options to be developed for analysis,**
   b. **any particular impacts or information that should be prioritized in the analysis,**
   c. **the calendar for consideration of trailing actions and need for workgroups to support option development, and**
   d. **other guidance as appropriate.**
2. **Respond to implementation issues identified by NMFS, as appropriate.**

<u>Decision Points</u>

1. Halibut Bycatch Mortality Allocation to the Trawl Sector
   a. Does the Council want to change from the adopted regulation?
   b. If yes, does the Council wish to recommend a change for both 2011 and the long term?
      i) If yes for 2011, what is the total bycatch amount recommend?
      ii) Satisfaction of Emergency Rule necessities.
      iii) The Executive Director should be tasked with transmitting the Council recommendation to NMFS for an emergency rule and to IPHC.
   c. If yes for 2012 and beyond, what are the Trailing Action alternatives for analysis and other guidance?
2. Amendment 21 Trawl/Nontrawl Allocation Supercedence of Amendment 6 LE/OA Allocations
   a. What are Trailing Action alternatives for analysis and other guidance?
3. Cost Recovery
   a. What are Trailing Action alternatives for analysis and other guidance?
4. QS Control Rule Safe Harbors – i) Risk Pools; ii) CFAs and; iii) Financing
   a. What are Trailing Action alternatives for analysis and other guidance?
5. Severability of MSCV Endorsement/Catch History Severability
   a. What are Trailing Action alternatives for analysis and other guidance?
6. AMP Pass Through in the third year
   a. What are Trailing Action alternatives for analysis and other guidance?
7. NMFS Implementation Issues
   a. Should lingcod be allocated into north and south geographic areas on January 1, 2011?
   b. If the Catch Share Program implementation is delayed for a few days in early January, should the trawl fishery be closed for those few days?

CALIFORNIA SHELLFISH CO., INC.

90085 LOGAN ROAD

ASTORIA, OR 97103

Risk Pools, Control Limits and Overfished Species, CFAs.

Risk Pools

Risk Pools should be assigned the highest priority as it is possible that inability to access constraining species could otherwise close the fishery early in the year. Risk Pools should be considered as a single and critical component of the Quota Share Program distinct and separate from Community Fishing Associations (CFAs).

The council has, to date, shown no interest in adjusting the constraining species caps and control and ownership caps in general, that issue may need to be reviewed in the future to insure long term success of the program. If we accept that we have to work within that current construct of Ownership and control caps for the near term, then we need to consider other ways to mitigate the effect of constraining species on the fishery.

So consider the following:

1. It is unlikely that constraining species caps will change short term.
2. It is reasonably likely that, with no changes in the caps, many will go over their quota share of constraining species.
3. Any permit or permits that exceed their quota share of constraining species will, at some point, be forced to leave the fishery for some period of time.
4. Without a vehicle available to allow access to additional pounds of constraining species any or all permits active in the fishery are at a high risk of losing their season.
5. Those in the fleet who have experience with risk pools think, under the circumstances, that risk pools will mitigate the effect of inadequate total pounds of constraining species available to the fishery.

My thoughts are:

1. Define Risk pools, CFAs and Financial Institutions as individual, stand alone, bits of the quota share program with risk pools taking the highest priority.
2. Address each of these separately at the council level.
3. Establish sideboards to eliminate CFA access to risk pools beyond their ability to bring pooled species to the pool.
4. Assist the fleet in each port to establish Risk Pools with control language unique to their ports and traditional fishing areas.
5. Individual risk pool rules apply only to that pool's defined fishing area.
6. Vessels moving from one area to another must abide by the rules established for the area in which the vessel is fishing.
7. Allow free inter pool movement of constrained species pounds.

I think risk pools are necessary to the success of the Quota Share program until such time as the availability of existing constraining species pounds is no longer a constraining factor to the fishery.

The presentation prepared and presented by Merrick Burden EDF and Joe Sullivan, Mundt Macgregor, LLP at the September meeting provides an excellent framework for creation of Risk Pools for port areas, regionally and coast wide. The support and reasoning is indisputable; However, the conclusion in that presentation that Risk Pools by necessity must have CFAs to appropriately manage them and pass through Adaptive Management Pounds (AMPs) to provide the benefits to communities, processors and harvesters is flawed.

The testimony defines community “a physical location within one of the three west coastal states where commercial fishing vessels dock and commercially harvested species are unloaded.” (I would add and processed). This suggests that ports in which the economic emphasis has, for many years, been shifting from commercial fishing to tourism turn back the clock through the tying of Risk Pools inextricably to CFAs, and CFAs to the appropriate distribution of AMPs. As most, if not all, of the fish received in these marginal ports is currently processed at another location, it is disingenuous to suggest that the greatest economic benefit to the nation will be generated by restoring a fishery based economy to these locations. Additionally, it is unlikely that benefits in resource conservation will be garnered by inextricably linking Risk Pools, CFAs and AMPs. Sufficient conservation measures already exist in the forms of RCAs, EFHs, MPAs and precautionary tools included in the calculation of ABCs, ACLs etc. There is no need for yet another layer of precaution/conservation and further, there is no need for an additional level of administrative/managerial/distribution complexities. AMPs can be distributed by the council through processors based on fleet location and activity, on a prorata basis, to the vessels in a given port proven to have been substantially damaged by the Trawl IFQ Program through an independent application process.

Initially it is critical that the council address those issues that have the potential to render the Trawl IQ program DOA.

1. Overfished Species, Risk Pool control Limits
2. Halibut IBQ

Ignoring these issues will virtually assure the failure of the program before the council has a chance to appropriately evaluate the program and its other potential unintended consequences.

Halibut IBQs

Although Halibut is managed outside of the council process, for the Quota Share Program it should be considered a constraining species eligible under the risk pool cap exemption. The problem is the result of the current IBQ being set *below* the assumed trawl fishery catch and can be easily corrected by raising the Trawl IBQ allocation to the current assumed level.

Community Fishing Associations (CFAs)

CFAs should be considered independently of Risk Pools and be assigned a much lower priority.

CFA Criteria, among other things, should include:

1. CFAs should be limited to communities with existing processing capacity, having stated an interest to the council, through a specified application process, in the formation of a CFA.
2. No exception to the control rule should be granted for CFAs.
3. Adaptive Management Pounds (AMPs) should not be tied in any way to CFAs.
4. Access to AMPs should be available through a separate application process with specified criteria that include restriction of AMPs distribution to areas with currently viable, functioning processor and harvester capacities.

The definition of CFA's should not be so restrictive as to exclude those communities desiring to form an association from doing so independently or by contracting administrative expertise; however, the existence of outside administrative expertise should not be mandated in the program. Currently there are groups proposing the only practical approach is, for these groups, to seek out communities with fishing history, no matter how far in the past, and restore the economic contribution from fisheries to these communities to some historic level. The Quota Share program anticipated a reduction in fleet and in active fishing ports. Historically the fleet has been tending toward consolidation and historically active fishing ports have consciously promoted tourism to replace fisheries in their economic structure.

I believe it is the responsibility of impacted communities, once being made aware of the opportunities available under CFA's, to start the CFA qualification process. Outreach programs should be set up by NMFS or the Council and directed to community representatives to insure their understanding of the program. Those communities with a need and desire to maintain a fishing culture will make the effort to apply for CFA status.

Tom Libby

Groundfish Advisory Subpanel
California Shellfish Co., Inc
Corporate Manager, Special Projects
Hallmark Fisheries/Point Adams Packing Company

Marine Interests Group
San Luis Obispo County

Working Committee

Harvey Cohon
Sierra Club
Mel de la Motte
Central Coast Fisheries Cons. Coalition
Ray Fields
Aquaculture
Matt Fleming
SLO Surfrider Foundation
Annie Gillespie
Morro Bay National Estuary Program
Bruce Gibson
San Luis Obispo County Supervisor
Monica Hunter
Environmental Center of San Luis Obispo
Ermina Karim
SLO Chamber of Commerce
Carolyn Moffatt
Commissioner, Port San Luis Harbor Dist.
Jeremiah O'Brien
MB. Commercial Fishermen's Organization
Janice Peters
Mayor, City of Morro Bay
Henry Pontarelli
Morro Coast Audubon Society
John Rowley
Virg's Fishing & Whale Watching
Dave Sears
at large, ret'd California State Parks
Debra Stakes
Cuesta College
Bill Ward
Port San Luis Comm. Fishermen's Assn.
Margaret Webb
MBNMS Advisory Council
Dean Wendt, Ph.D.
Assoc. Prof., Cal Poly State University
Patricia Wilmore
PG&E Company

Web site:
www.mbnep.org/mig

Don Maruska
independent facilitator
895 Napa Ave. #A-5, Morro Bay, CA 93442
Phone: 805-772-4667
Fax: 805-772-4697
Email: marine@donmaruska.com

October 27, 2010

Pacific Fishery Management Council

RE : Support for Community Fishing Associations with expanded accumulation limits for dedication to local landings (Item H.5)

At its October 27, 2010, meeting, the Marine Interests Group of San Luis Obispo County (MIG) unanimously supported actions to facilitate the development of Community Fishing Associations (CFAs).

Community fishing fleets need an opportunity to continue

- Groundfish activity is an important element that supports critical infrastructure (fuel, ice, buyers, processors, etc.) in coastal communities.
- Close linkages between fish stocks, fishermen, and fishing communities provide an enduring social structure for responsible stewardship.
- We are concerned that the consolidation of fishing activity as a result of catch shares could have significant downstream effects on local fishing communities, if unmitigated.
- The federal government has an obligation to address such socio-economic impacts of the catch shares program.

Catch shares need to provide immediate opportunities for CFAs

- CFAs offer an opportunity for resiliency for community fishing fleets.
- Current accumulation limits do not provide sufficient quota for CFAs to secure a sustainable level of activity.
- Proposals for CFAs that can demonstrate a legitimate public purpose and have the support and oversight of local government entities should have the opportunity to acquire 2 times the control limits for individual operators.

We urge the Council to expedite action on CFAs so that fishing communities will have the tools to respond proactively to the coming changes.

Marine Interests Group of San Luis Obispo County

CONSIDERATION OF INSEASON ADJUSTMENTS – PART II, IF NECESSARY

This agenda item considers inseason adjustments to 2010 and 2011 groundfish fisheries. Inseason adjustments are also considered under Agenda Item H.3. Should the Council adopt preliminary recommendations under Agenda Item H.3, then final action will be taken under this agenda item. However, should the Council make final recommendations under Agenda Item H.3, then this agenda item will be cancelled.

Council Action:

1. Adopt final inseason adjustments to 2010 and 2011 groundfish fisheries, as necessary.

Reference Materials:

1. None.

Agenda Order:

a. Agenda Item Overview **Kelly Ames**
b. Reports and Comments of Advisory Bodies and Management Entities
c. Public Comment
d. **Council Action:** Adopt Final Recommendations for Adjustments to 2010 and 2011 Groundfish Fisheries

PFMC
10/13/10

GROUNDFISH ADVISORY SUBPANEL REPORT ON CONSIDERATION OF INSEASON ADJUSTMENTS – PART II

2010 Trawl – Darkblotched

The Groundfish Advisory Subpanel (GAP) notes that there is a great deal of uncertainty about the darkblotched mortality estimates provided in the score card and reason to believe they are excessive. For example, last year the darkblotched trip limits were substantially lower than this year and hence a greater proportion of the darkblotched bycatch would be discarded relative to the amount discarded this year under higher limits. Additionally, because this year's period 1 Petrale trip limits were much lower (1/3) than in 2009, the fishery effort in the 150 fm Petrale cutouts, where bycatch rates are higher, was much less. Both these factors would contribute to the overexpansion of the estimated darkblotched bycatch in this year's fishery.

The GAP also notes the scorecard provides bycatch limits but, in reality, sectors will take less than what is provided in the score card. For example, all whiting sectors are expected to come in under the bycatch limits provided in the scorecard. The industry representatives on the GAP have made a strong commitment to voluntary reductions in darkblotched bycatch starting today. This is expected to keep bycatch even further below the limits reported in the scorecard.

2011 Trawl – Overfished Species

The Council made two-year trawl non-trawl allocations for bocaccio, canary, cowcod, Petrale, and yelloweye during the 2011-2012 harvest specifications and management measures process. Due to the delay in implementing the specifications and the uncertainty surrounding the 2011 overfished species harvest specifications, the GAP encourages the Council to retain flexibility for adjusting the trawl and non-trawl allocations in 2011 for those species as needed.

2011 Trawl – Yelloweye

One impact of a reduction in the trawl allocation of yelloweye from 0.6 mt to 0.3 mt may be illustrated by examining the effect of the change on the amount of quota pounds (QP) that will be allocated to each permit. Assuming an average weight of 5 pounds per fish, the change would reduce the number of vessels with at least enough QP to catch one fish from about 75 vessels to about 40 vessels, leaving about 125 vessels without enough QP to take one average sized yelloweye.

2011 Trawl - Skates

As the fleet starts using halibut excluders this will likely provide some savings for skate, keeping skate mortality within the annual catch limit (ACL).

2011 Nontrawl Sablefish (Limited Entry and Open Access)

For open access in the north and south, since the limits are low and there is a long run to the fishing grounds, the GAP asks that the weekly limit be set at half the bimonthly limit. This will result in a more economically viable sablefish fishing opportunity. It will also provide them an opportunity to catch their limit and then move into other fisheries, improving the overall economic viability of the fishing operation.

The GAP also notes that the Council has been reluctant to increase the bimonthly open access trip limits in the north, routinely resulting in lost fishing opportunity and fish left unharvested at the end of the year. This pattern of fish left unharvested, show the importance of making inseason adjustments in a timely manner.

Next year the amount of sablefish that will be available will be even lower. The industry believes the lower amounts of fish available and lower trip limits will decrease effort. The GAP would like a Council assurance that it will consider inseason adjustment to bring the trip limit levels up even to the 2009-2010 levels if necessary to ensure that no sablefish are left over at the end of the year.

PFMC
11/08/10

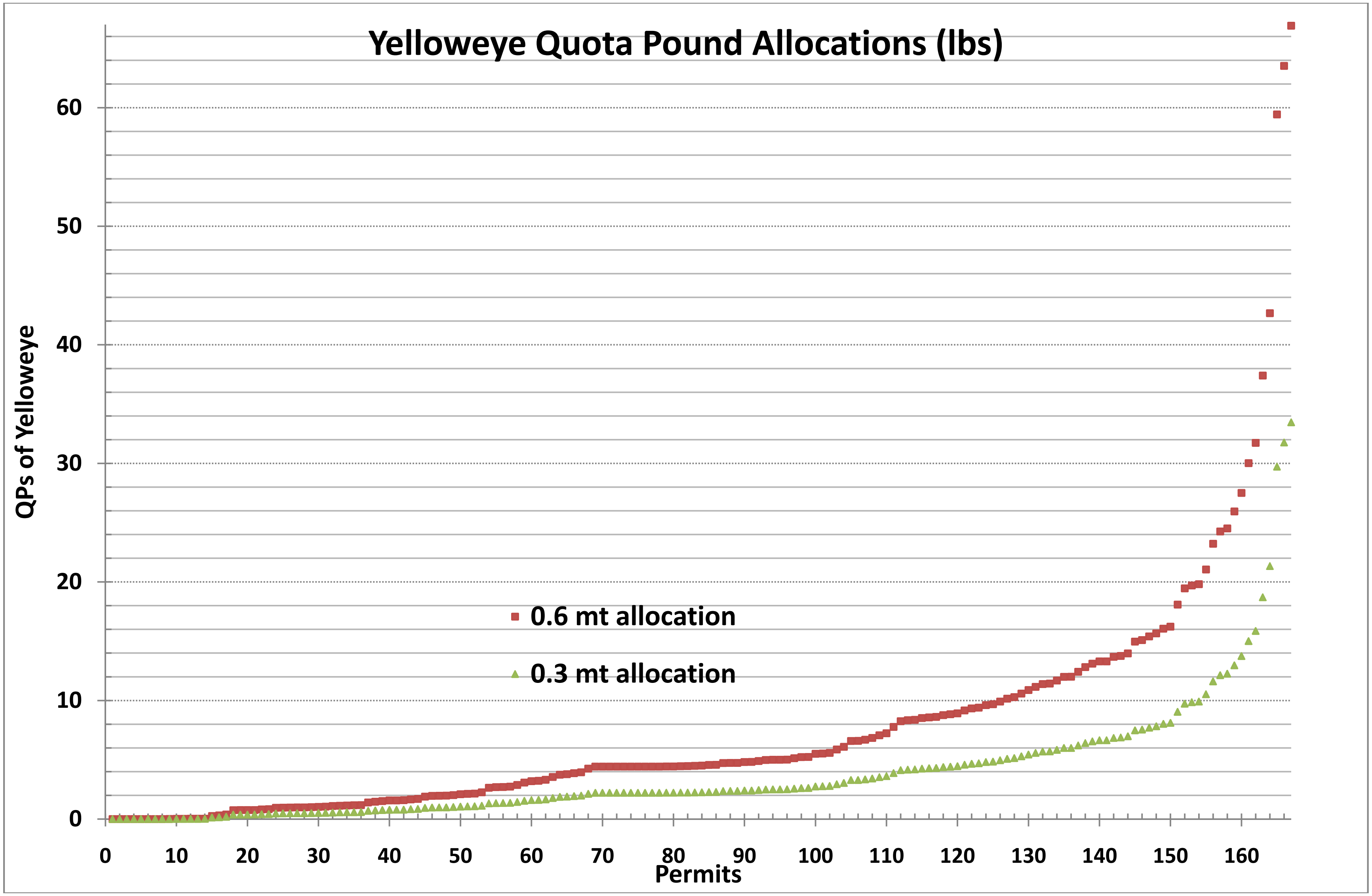


Figure. Allocation of yelloweye QP to trawl permits for 2011 based on level of trawl allocation.

GROUNDFISH MANAGEMENT TEAM REPORT ON INSEASON ADJUSTMENTS PART II FOR 2010

Projected mortality impacts (mt) of overfished groundfish species for 2010 updated based on updated tribal impacts, bottom trawl, and Pacific whiting trawl under the changes to management measures adopted under Inseason Part I.

Fishery	Bocaccio b/	Canary	Cowcod	Dkbl g/	POP	Widow	Yelloweye
Limited Entry Trawl - Non-whiting	22.4	8.9	0.2	**298.3**	95.6	13.1	0.2
Limited Entry Trawl - Whiting							
At-sea whiting motherships a/		3.3		**5.5**	13.6	67.0	0.0
At-sea whiting cat-proc a/		4.8		**5.5**	2.4	95.0	0.0
Shoreside whiting a/		5.9		**5.0**	15.7	117.0	0.0
Tribal whiting		1.3		0.0	7.2	8.8	0.0
Tribal							
Midwater Trawl		**3.8**		0.0	0.0	**60.6**	0.0
Bottom Trawl		0.8		0.0	3.7	0.0	0.0
Troll		0.5		0.0	0.0		0.0
Fixed gear		0.3		0.0	0.0	0.0	2.3
Fixed Gear Sablefish	0.0	2.5	0.0	4.5	0.4	0.0	0.9
Fixed Gear Nearshore	0.3	3.6	0.0	0.0	0.0	0.3	1.1
Open Access: Incidental Groundfish	0.8	1.7	0.0	15.0	0.0	3.3	0.3
Recreational Groundfish e/							
WA		20.9					5.4
OR						1.0	
CA	67.3	22.9	0.3			6.2	2.7
EFPs	11.0	1.3	0.2	1.0	0.1	11.0	0.2
Research: Includes NMFS trawl shelf-slope surveys, the IPHC halibut survey, and expected impacts from SRPs and LOAs.							
	2.0	4.5	0.2	2.0	2.0	5.7	0.5
TOTAL	103.8	86.9	0.9	336.8	140.7	389.0	13.6
2010 OY f/	288	105	4.0	330	200	509	14
Difference	184.2	18.1	3.1	-6.8	59.3	120.0	0.4
Percent of OY	36.0%	82.8%	22.5%	102.1%	70.4%	76.4%	97.1%
Key		= either not applicable; trace amount (<0.01 mt); or not reported in available data sources.					

a/ Non-tribal whiting values for canary, darkblotched, and widow reflect bycatch limits for the non-tribal whiting sectors. All other species' impacts are projected from the GMT's whiting impact projection model. The Council may elect to change these bycatch limits when setting final whiting management measures in March 2010 or under any inseason action at any of their future meetings.

b/ South of 40°10' N. lat.

e/ For California, values in scorecard represent projected impacts for all species except canary and yelloweye rockfish, which are the prescribed harvest guidelines. For Washington and Oregon, the canary value represents the HG. For yelloweye, the value represents projected impacts for the Oregon fishery (2.8 mt) through the end of the year and the Washington share of the HG (2.6 mt).

f/ 2009 and 2010 OYs are the same except for darkblotched (291 mt in 2010), POP (200 mt in 2010), and widow (509 mt in 2010).

g/ Regulations specify a commercial harvest guideline of 288 mt (see 75FR39178)

GROUNDFISH MANAGEMENT TEAM REPORT ON INSEASON ADJUSTMENTS PART II FOR 2011

The Groundfish Management Team (GMT) discussed Council and National Marine Fisheries Service (NMFS) guidance under Agenda Item H.3 Consideration of Inseason Adjustments Part 1 and offers the following thoughts and considerations.

Delay in the 2011-2012 Harvest Specifications and Amendment 21

The Amendment 21 order of operations specifies that the annual catch limit (ACL) or annual catch target (ACT) is reduced by the set asides (tribal, incidental open access, research, EFPs) resulting in the fishery harvest guideline that is further divided into trawl and non-trawl allocations. The trawl and non-trawl allocations are implemented through Amendment 21 (trawl dominant species) as well as through the biennial harvest specifications and management measures process (non-trawl dominant overfished species). The off the top deductions and resulting trawl and non-trawl allocations are to remain static for the duration of the biennium.

During the biennial process, the Council specified off the top deductions based on the best available information at the time. As mentioned in the GMT report under Agenda Item H.3, the International Pacific Halibut Commission (IPHC) is considering alternate configurations for the halibut stock assessment survey, which could change our estimates of yelloweye impacts. Changes to this survey design are anticipated to be approved at the IPHC Annual Meeting in January 2011. Further, the Washington Department of Fish and Wildlife (WDFW) and Oregon Department of Fish and Wildlife (ODFW) have expressed the desire to continue the enhanced yelloweye rockfish survey, depending on the amount of yelloweye rockfish available. **Given the unique situation with the biennial specifications delay, the Council may wish to have flexibility to adjust the off the top deductions in April 2011.** As previously noted in past GMT statements, the Amendment 21 order of operations and static allocations is problematic. Inevitably, given the difficulty in forecasting set aside activities in the tribal, incidental open access, research, and EFPs activities, the off the top deductions will be mis-specified. Solutions that result in the least amount of disruption to the formal allocations will be needed. We recommend that this issue be scoped during the Amendment 6 vs. Amendment 21 trailing amendment for trawl rationalization.

The Council recommended that NMFS implement two-year trawl and non-trawl allocations for bocaccio, canary, cowcod, petrale, and yelloweye during the 2011-2012 harvest specifications and management measures process. **Due to the delay in implementing the 2011-2012 harvest specifications and management measures and the uncertainty surrounding the 2011 overfished species harvest specifications, the Council may wish to retain flexibility for adjusting the two-year trawl and non-trawl allocations for these species in 2011, as needed.**

Model Uncertainty

Prompted by Council discussion under Agenda Item H.3 Consideration of Inseason Adjustments – Part 1, the GMT further discussed the inherent uncertainty in modeling to attain target species optimal yields (OYs), targets, or allocations. In general, when individual modelers develop point estimates of impacts, they do so considering the quality of the data that goes into the model, the performance of the model, the ability to predict the performance of the fishery and the likelihood of achieving a year-round fishery. Those point estimates are then presented to the Council with a description of the considerations that went into developing them, particularly any pertinent information that informs estimation uncertainty. The discussion of uncertainty is meant to help guide the Council to a policy decision based on their understanding of the risk of exceeding a given target.

Under the new National Standard 1 (NS1) guidelines, we are required to account for uncertainty in developing accountability measures (AM). The NS1 guidelines list two types of uncertainty to account for in developing AMs: 1) uncertainty in the ability of managers to constrain catch so the ACL is not exceeded, and 2) uncertainty in quantifying the true catch amounts (*i.e.*, estimation errors). For the 2013-2014 biennial management cycle, the GMT will be examining all of our models with a particular focus on describing and documenting the estimation error (e.g. variance in point estimates) for each to help account for management uncertainty.

Research – Yelloweye catch in the IPHC Survey

Historically, the Council has taken a risk averse approach to research set asides. The IPHC survey typically has the highest research impacts and is usually completed in August. If IPHC research catch exceeds the set aside, the Council is left with few options for reducing catch at the September meeting. Under Agenda Item H.3, the Council's preliminary guidance on yelloweye rockfish deductions from the OY for 2011 includes a 1.3 mt set aside for research (1.1 mt for IPHC plus 0.2 mt for other research), reduced from the 3.3 mt estimated during the harvest specifications and management measures process.

Table 1 reproduces an analysis of yelloweye catch in the Area 2A IPHC survey that we presented to the Council in March.[1] We did not update this data with the 2010 catch of 0.3 mt. This number would obviously bring down every number but the max. We offer this information again as a reminder that the IPHC research catch is variable and has reached as high as 1.1 mt.

[1] PFMC March 2010 Briefing Book, Agenda Item E.5.b, Supplemental GMT Report.

Table 1. Yelloweye rockfish catch statistics from IPHC standard grid stations, 2002-2009, with projected impacts given 8 skates in 2010 and 3-year average weight (2007-2009). Reproduced from PFMC March 2010 Briefing Book, Agenda Item E.5.b, Supplemental GMT Report.

Statistic	Predicted Number YE	Predicted (mt)
Median	218	0.8
75th percentile	228	0.8
90th percentile	258	0.9
Max	316	1.1
Average	157	0.7

Council Guidance Regarding 2011 Recreational Fisheries

The Council requested that the GMT analyze the implementation of the following recreational regulations for 2011. Some of these actions appear to be routine inseason management measures as defined in the Groundfish Fishery Management Plan and groundfish regulations, while others may require an impact analysis and inclusion in a rule making. Based on preliminary guidance from the Northwest Region, the GMT attempted to highlight the difference between those actions in the discussion below.

The GMT believes implementing these regulations by January 1, 2011 would result in a seamless transition to the management measures contained in the 2011-2012 final rule, which is anticipated for publication in April 2011. This action would allow for somewhat consistent state and federal regulations to be in place on January 1st; however, in some instances the states may still opt to have regulations that are more restrictive than the federal regulations (e.g., more restrictive bag limit or sub-bag limit). The intent of this action would be to avoid the complication of inseason changes after the April emergency and final rules are implemented. The public and enforcement have already been notified and are anticipating these changes on January 1, 2011. The delay in implementing these regulations will result in public and enforcement confusion and could be in addition to any inseason changes that may be necessary later in the season (for example, increased management measures due to higher than anticipated catches of overfished species). Frequent changes in the recreational regulations cause angler and enforcement confusion and result in additional cost and work load, necessary to inform the public of the changes.

Washington Recreational Fishery

Washington recreational management measures that were recommended by the Council for the start of 2011 were developed to maintain low levels of incidental rockfish catch, primarily yelloweye rockfish, while maintaining fishing opportunities for halibut and lingcod. These management measures rely on depth restrictions to keep the fishery in shallower waters to limit encounters with yelloweye rockfish and to increase the survivability of released rockfish. Yelloweye encounters are higher in the north than the south coast areas and as a result depth restrictions are progressively more restrictive as you move from south to north. In our preliminary review of the FMP and groundfish regulations, it appears that changes to the recreational rockfish conservation areas (e.g., depth restrictions) are routine inseason management measures.

Washington is requesting the following management measures be considered for 2011:

Coastwide Bag Limits

In addition to depth restrictions, Washington will implement a reduced aggregate bottomfish bag limit from 15 to 12 and a separate sub limit for cabezon of two per angler per day. Analysis shows that less than 1% of anglers retain more than 12 bottomfish. A sub limit of 2 cabezon would provide regulations that are consistent with the adjacent Puget Sound management area and would limit harvests for a species with uncertain stock status. In our preliminary review of the FMP and groundfish regulations, it appears that bag limit adjustments are routine inseason management measures. It is unclear whether the cabezon sub-bag limit would be considered routine, but it may be possible for the state to implement a more restrictive (i.e., sub-bag limit) than the federal regulations. The GMT notes that the sub-bag limit for cabezon may be necessary to address the uncertainty in the cabezon stock status in Washington and as such maybe a conservation concern.

Total projected yelloweye impacts for 2011 under these management measures are estimated to be 2.5 mt. In both 2009 and 2010 only three percent of the total season yelloweye harvest was taken prior to May 1. The majority of the yelloweye impacts occur in May and June; 78% and 71% respectively for 2009 and 2010. Projected yelloweye impacts through June 2011 are 1.4 mt.

North Coast (Marine Catch Areas 3 and 4)
Retention of bottomfish prohibited seaward of 20 fm from June 1 through September 30 except on days that halibut fishing is open (6 and 7 days in 2009 and 2010, respectively). It is unlawful to fish for, retain, or possess bottomfish or halibut in the yelloweye rockfish conservation areas (YRCA).

South Coast (Marine Catch Area 2)
Retention of bottomfish, except rockfish, prohibited seaward of 30 fm from March 15 through June 15, except sablefish and Pacific cod retention is allowed May 1 through June 15; no retention of bottomfish, except lingcod, during the primary halibut season; no retention of lingcod south of 46° 58’ N. lat. and seaward of 30 fm on Fridays and Saturdays from July 1 through August 31; and cannot fish for, retain, or possess bottomfish or halibut in South Coast YRCA and Westport Offshore YRCA.

Columbia Area (Marine Catch Area 1)
Retention of bottomfish, except sablefish and pacific cod, prohibited with halibut on board May 1 through September 30.

Oregon Recreational Fishery

The Oregon recreational fishery is structured to allow fishing opportunities throughout the calendar year, while not exceeding the bycatch caps of overfished species. Table 2 and Table 3 show the projected Oregon recreational bottomfish fishery impacts for 2011 during the January 1 through May 1 and January 1 through July 1, under the season structure proposed in the 2011-2012 SPEX.

Table 2. Non-overfished species impacts accruing from January 1st to May 1st and January 1st to July 1st in the Oregon recreational bottomfish fishery.

	Projected Impacts (mt)	
Species	**Thru May 1**	**Thru July 1**
Black Rockfish	62.1	156.8
Other Nearshore Rockfish	1.8	5.9
Cabezon	2.3	5.2
Greenlings	0.7	1.9

Table 3. Overfished species impacts accruing from January 1st to May 1st and January 1st to July 1st in the Oregon recreational bottomfish fishery.

		Thru May 1		**Thru July 1**	
Species	**HG (mt)**	**Projected Impacts (mt)**	**2011 Percent HG**	**Projected Impacts (mt)**	**2011 Percent HG**
Yelloweye Rockfish	2.3	0.4	17%	1.4	60%
Bocaccio	N/A	N/A	N/A	N/A	N/A
Cowcod	N/A	N/A	N/A	N/A	N/A
Canary Rockfish	16	0.8	5%	1.4	9%
Widow Rockfish	N/A	N/A	N/A	N/A	N/A

Over the last several years, the concern over yelloweye rockfish impacts has been the driving factor for management measures. The bottomfish fishery is open to all depths during January through April and October through December. To limit yelloweye rockfish impacts, and stay within allocations, the fishery is restricted to inside of 40 fm during the summer months, May through September. These months tend to have better weather and greater effort, therefore increased catch of target species and associated impacts to overfished species. The time period of January through April, though open to all-depth, has low yelloweye rockfish impacts, approximately 13% of the annual impacts over the last three years. The majority of yelloweye impacts occur during the months of the greatest effort, July and August. Based on the recent history of the fishery and expected other fishing opportunities, it is anticipated that this trend will continue in 2011, under both 2010 seasonal depth restriction and bag limit regulations and the regulations proposed for 2011 under SPEX. Therefore, no changes to the seasonal depth regulations appear to be necessary to stay with in the Oregon recreational yelloweye allocation, given as Council guidance under Inseason Part I at this Council meeting.

One change from the 2010 regulations that NMFS may want to consider implementing this non-routine management measure for 2011, prior to the anticipated final adoption of the 2011-2012 SPEX regulations, is the addition of the cabezon seasonal sub-bag limit in the Oregon recreational bottomfish fishery. As mentioned above, it is unclear whether the cabezon sub-bag limit would be considered routine, but it may be possible for the state to implement a more restrictive regulation (i.e., sub-bag limit) than the federal regulations. The GMT notes that the sub-bag limit for cabezon may be necessary to address the new cabezon ACL and lower recreational target for 2011.

Under the 2011-2012 SPEX, there is a 50 mt ACL for cabezon in Oregon. Previously cabezon had been managed under a state specified landing cap. In an effort to reduce total impacts to cabezon from the Oregon recreational fishery, a seasonal sub-bag limit for cabezon ("of the marine bag limit, no more than one fish may be cabezon") was proposed in the 2011-2012 SPEX. During the normal process, the state of Oregon would adopt concurrent regulations into state rules following the publication of the federal regulations. Since this proposed change is to be in effect prior to the anticipated finalization of the 2011-2012 SPEX regulations, from April 1 through September 30, coinciding with the seasonal depth restrictions, and since the state can set more conservative regulations than the federal regulations, the state of Oregon has put this regulation into the state rules, effective January 1, 2011. This should provide a seamless transition of the fishery regulations upon final adoption of the SPEX for fisheries managers, enforcement personnel and the angling public. However if NMFS does not implement this management measure there will be a discrepancy between rolled over 2010 federal regulations and the new more restrictive 2011 state regulations.

California Recreational Fishery

The CDFG is proposing adoption of the following management measures effective January 1, 2011, consistent with the Council's final preferred alternative and the proposed rule to implement the 2011-2012 harvest specifications and management measures. The season and depth restrictions adopted by the Council in June were approved by the California Fish and Game Commission and will be reflected in the California regulation booklet. The season and depth restrictions prior to May 1st as approved by the Council in June (other than those for California scorpionfish and the Cowcod Conservation Area addressed below) do not deviate from the 2010 status quo regulations. If NMFS selects a yelloweye rockfish ACL that result in a California recreational harvest guideline that is projected to be exceeded during the course of the season, inseason action can be taken to prevent an overage. The projected yelloweye rockfish impacts for the 2011 season with the season and depth restrictions adopted in June and the regulations mentioned below are 3.1 mt. Yelloweye rockfish are exceedingly uncommon in shore modes and the Southern Management Area. Since the Southern Management Area is the only Management Area open to boat based fishing prior to May 1st, no yelloweye rockfish is projected to accrue before May 1st. The projected impacts for all other species from January 1st to May 1st with 2011 regulations in place are provided in Table 4 and Table 5 below. Only 0.9 mt of yelloweye rockfish is projected to accrue by July 1st in the event that action cannot be taken to implement the 2011 regulatory specifications before the June Council meeting. The

January 1st to July 1st projected impacts for all other species with the 2011 regulations in place are provided in Table 6 and Table 7 below are the management measures that would need to be effective January 1st to ensure consistent regulations with the remainder of the year once NMFS is able to implement the full biennial Specifications package.

1. **Eliminate the lingcod spawning closure in the California recreational fishery for all fishing modes, making lingcod seasons consistent with those for rockfish in each management area.** This proposal was included in the 2011-2012 harvest specifications and management measures because the latest stock assessment indicated that the southern lingcod stock is rebuilt. The season restriction changes will reduce regulatory complexity, enhance fishing opportunity during the affected months and allow the fishery to come closer to achieving the ACL/OY for this target stock. This regulation change would be necessary to prevent inconsistency in the retention regulation for shore fishing in January through the end of March for shore fishermen state wide and March for boat based anglers in the Southern Management Area. The preliminary review of the FMP and groundfish regulations, this does not appear to be a routine inseason management measure. Further, it is unclear whether this action would require an impact analysis and inclusion in a rule making.

2. **Decrease the lingcod size limit to 22 inches with a 14 inch fillet length restriction, statewide.** This proposal was included in the 2011-2012 harvest specifications and management measures because the latest stock assessment indicated that the southern lingcod stock is rebuilt. This regulation would enhance fishing opportunity during the open months of the season and allow the fishery to come closer to achieving the ACL/OY for this target stock. At present the size limit is 24 inches with a 16 inch fillet length restriction, which would differ from the length and fillet length restrictions adopted by the Council for the remainder of the year unless the regulation the proposed change is taken to address prevent this discrepancy. While, most changes to size limits are considered routine management measures, it is unclear whether this action would require an impact analysis and inclusion in a rule making.

3. **Change the California scorpionfish (sculpin) depth restriction in the Southern Management Area during the closed season from rockfish from 40 fm to 60 fm.** This action will reduce regulatory complexity and increase fishing grounds and is not projected to exceed harvest limits for California scorpionfish or appreciably increasing impacts on overfished species. At present, the California scorpionfish depth restriction is 40 fm in January and February, which would result in an inconsistency with the adopted 2011 depth restriction of 60 fm in the remainder of the year. While, most changes to depth restrictions are considered routine management measures, it is unclear whether this action would require an impact analysis and inclusion in a rule making.

4. **Increase the cabezon bag limit to 3 fish statewide.** The most recent stock assessment has indicated that the abundance of cabezon in California is greater than previously thought. The increased bag limit would enhance fishing opportunity during the open months of the season and allow the fishery to come closer to achieving the ACL/OY for this target stock. The current bag limit is currently two fish per person in 2010, which would be inconsistent with the three fish bag limit adopted for 2011 in the shore mode in January and February state

wide and boat based modes in the Southern Management Area in March and April compared to the remainder of the year if the 2010 regulation is rolled over until May 1st. A preliminary review of the FMP and groundfish regulations indicates that most changes to bag limits are considered routine management measures. This bag limit adjustment was also previously analyzed in the 2009-2010 EIS therefore the team believes this would be a routine inseason management measure.

5. **Increase the recreational depth restriction in the Cowcod Conservation Area from 20fm to 30.** Analysis provided in the 2011-2012 biennial regulatory specifications indicate that the depth restriction in the CCA could be increased to expand fishing grounds without appreciable increase in interactions with Cowcod, which are very uncommon in depths less than 40 fm. Failure to implement this management measure January 1st would create an inconsistency in the CCA depth restriction in March and April, which would have a depth restriction of 20 fm as compared with the remainder of the season once the regulatory package is implemented, when it would be 30 fm. While, most changes to depth restrictions are considered routine management measures, it is unclear whether this action would require an impact analysis and inclusion in a rule making.

6. **Modify the list of groundfish species allowed to be taken recreationally in the Cowcod Conservation Area to include shelf rockfish.** This management measure will reduce wastage of shelf rockfish due to discard mortality by converting discards to retained catch. The current 2010 restrictions prohibit retention or possession of shelf rockfish within the CCA and if continued in March and April 2011 when the CCA would be open to boat based groundfish fishing, would result in inconsistency with the remaining months of the year. The preliminary review of the FMP and groundfish regulations, this does not appear to be a routine inseason management measure. Further, it is unclear whether this action would require an impact analysis and inclusion in a rule making.

7. **Modify cabezon and kelp greenling gear restrictions to be consistent with rockfish regulations (1 rod with no more than 2 hooks).** This management measure is intended to increase consistency in the gear used to target the Rockfish, Cabezon and Greenling complex and lingcod, which are co-occurring species. There are no gear restrictions on Cabezon and kelp greenling in 2010 and if these regulations continue they would result in an inconsistency with the regulations from January to April in the shore fishery and in the boat based fishery in the Southern Management Area in March and April compared to the remainder of the year unless it is implemented on January 1st. The preliminary review of the FMP and groundfish regulations, this does not appear to be a routine inseason management measure. Further, it is unclear whether this action would require an impact analysis and inclusion in a rule making.

Table 4. Non-overfished species impacts accruing from January 1st to May 1st in the California recreational fishery with specified regulation changes in place.

Species	Projected Impacts
Black Rockfish	0.0
Blue Rockfish	2.3
Cabezon	0.7
California Scorpionfish	13.0
California Sheephead	4.5
Greenlings	0.0
Lingcod	1.3
Minor Nearshore North	7.8
Minor Nearshore South	13.5

Table 5. Overfished species impacts accruing from January 1st to May 1st in the California recreational fishery with specified regulation changes in place.

Species	HG (mt)	Projected Impacts (mt)	2011 Percent HG
Yelloweye Rockfish	2.0	0.0	0%
Bocaccio	66.3	15.5	23%
Cowcod	0.3	0.05	16%
Canary Rockfish	22.9	0.05	0%
Widow Rockfish	NA	1.2	NA

Table 6. Overfished species impacts accruing from January 1st to July 1st in the California recreational fishery with specified regulation changes in place.

Species	HG (mt)	Projected Impacts (mt)	2011 Percent HG
Yelloweye Rockfish	2.1	0.9	43%
Bocaccio	66.3	24.1	36%
Cowcod	0.3	0.06	21%
Canary Rockfish	22.9	2.10	9%
Widow Rockfish	NA	2.2	NA

Table 7. Non-overfished species impacts accruing from January 1st to July 1st in the California recreational fishery with specified regulation changes in place.

Species	Projected Impacts
Black Rockfish	45.1
Blue Rockfish	38.2
Cabezon	7.1
California Scorpionfish	20.9
California Sheephead	9.1
Greenlings	3.0
Lingcod	51.1
Minor Nearshore North	2.4
Minor Nearshore South	79.7

Commercial Fisheries

Trawl Allocation of Yelloweye Rockfish

The GMT attempted to examine the impacts between a trawl allocation of 0.3 mt (Council guidance under Agenda Item H.3) and 0.6 mt (2011-2012 allocation) of yelloweye in terms of expected quota pound (QP) allocations for 2011.

Table 8 makes this basic comparison based on estimated quota share (QS) allocations received from Council staff. Although we did not attempt to find the average weight of a yelloweye caught in the trawl fishery, we did have the average weight of a yelloweye caught in the 2010 IPHC survey readily available. On stations off Oregon, that average weight was 2.6 kg (5.7 lbs) and off Washington it was 3.6 kg (7.9 lbs). If these weights are representative of what may be caught in the trawl fishery, then permits receiving QP of 5 lbs or less will not receive enough to cover the catch of a single yelloweye. As shown in Table 8, the number of permits receiving less than 5 lbs of yelloweye QP increases by 38.9 percent under the 0.3 mt allocation compared to the 0.6 mt allocation.

Table 8. Number (n) of permits within various QP categories (rows) under yelloweye trawl allocations of 0.3 mt and 0.6 mt.

QP	*0.6 mt*	*0.3 mt*	+/-
70 lbs > n > 50 lbs	3	0	-3
50 lbs > n > 30 lbs	4	2	-2
30 lbs > n > 20 lbs	6	2	-4
20 lbs > n > 10 lbs	28	9	-19
10 lbs > n > 5 lbs	33	28	-5
5 lbs > n > 0 lbs	85	118	33
0 lbs	8	8	0
Total	167	167	

As mentioned at the beginning of this report, due to the delay in implementing the 2011-2012 harvest specifications and management measures and the uncertainty surrounding the 2011 overfished species harvest specifications, the Council may wish to retain flexibility for adjusting the trawl and non-trawl allocations for these species in 2011, as needed.

Limited Entry Rationalized Trawl Fishery

Under Agenda Item H.3, the Council asked the GMT to provide information on the amount of catch that would accrue in the fishery during the first few months of the year. Table 9 shows the sum of landed catch (mt) for major target species and complexes of the LE non-whiting, bottom trawl fishery, from 2007 through 2009, by year. It shows the landings from January to June, annual landings, and the percent that January to June landings are of annual landings.

Table 9 Landed catch (mt) for target species and complexes in the LE non-whiting bottom trawl fishery from 2007 through 2009, with landings and percent of total landings January to June.

Year	2007	2008	2009
Annual	21,129	25,174	27,931
Jan-June	10,528	12,988	16,107
% Annual	50%	52%	58%

<u>Contingency in case of TIQ Delay</u>

Based on guidance from the Northwest Region, the rationalized trawl fishery is anticipated to begin in January 2011, with quota pounds issued via an emergency rule. It is also the GMT's understanding that, unless NMFS takes action to supersede, the 2010 trawl trip limit tables will rollover and still be in regulations for 2011. **As a contingency plan, the Council should adopt the following trip limits and RCA structure for 2011 if trawl rationalization is delayed beyond January 1, 2011 (Table 10).** This philosophy is consistent with the approach taken in the development of the 2011-2012 harvest specifications and management measures process. The limits have been modified, given the rollover of the 2010 harvest specifications, which in some instances are lower than the 2011 ACLs.

Table 10. Trip limit table for 2011 based on the revised contingency plan for the trawl fishery**.** This alternative relates to Alternative 2, which was analyzed in the DEIS.

			2-month cumulative-poundage limits							
2-month period	RCA lines (fm) shallow	RCA lines (fm) deep	sable-fish	long-spine	short-spine	Dover sole	petrale sole	arrow-tooth	other flatfish	slope rockfish
N. of 40°10' N lat.										
Large/small footrope limits										
1	*75*	250	**14,000**	20,000	18,000	110,000	**6,000**	150,000	110,000	6,000
2	*75*	200	**14,000**	20,000	18,000	110,000	**6,000**	150,000	110,000	6,000
3	*75*	200	**13,000**	20,000	18,000	110,000	**5,000**	150,000	110,000	6,000
4	*100*	200	**13,000**	20,000	18,000	110,000	**5,000**	150,000	110,000	6,000
5	*75*	200	**13,000**	20,000	18,000	110,000	**5,000**	150,000	110,000	6,000
6	*75*	250	**14,000**	20,000	18,000	110,000	**6,000**	150,000	110,000	6,000
Selective gear limits										
1	75	*250*	**7,000**	5,000	5,000	50,000	**3,500**	50,000	40,000	
2	75	*200*	**7,000**	5,000	5,000	50,000	**3,500**	50,000	40,000	
3	75	*200*	**8,000**	5,000	5,000	50,000	**3,500**	50,000	40,000	
4	100	*200*	**8,000**	5,000	5,000	50,000	**3,500**	50,000	40,000	
5	75	*200*	**7,000**	5,000	5,000	50,000	**3,500**	50,000	40,000	
6	75	*250*	**7,000**	5,000	5,000	50,000	**3,500**	50,000	40,000	
38° - 40°10' N lat.										
1	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	15,000
2	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	15,000
3	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	15,000
4	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	15,000
5	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	15,000
6	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	15,000
S. of 38° N lat.										
1	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	55,000
2	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	55,000
3	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	55,000
4	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	55,000
5	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	55,000
6	100	150	**12,000**	20,000	18,000	110,000	**5,000**	10,000	110,000	55,000

The projected impacts of the above trip limits and RCA structure are shown in Table 11 below. These management measures are the same as those in Alternative 2 in the SPEX DEIS.

Table 11. Projected impacts for Alternative 2 (intermediate-ACL scenario) for 2011.

Major Target Species	Model Target	Model Projection	Proj. - Target	Proj. % of Target
Sablefish N of 36° N. lat.	2,325	2,324	-1	100.0%
Longspine N. of 34 27' N. lat.	2,000	1,337	-663	66.9%
Shortspine N. of 34 27' N. lat.	1,450	1,418	-32	97.8%
Dover sole	16,306	12,492	-3,814	76.6%
Arrowtooth flounder	14,166	4,607	-9,559	32.5%
Petrale sole	643	632	-11	98.3%
English sole	18,659	439	-18,220	2.4%
Other flatfish	4,886	840	-4,046	17.2%
Minor Slope Rockfish North	877	170	-707	19.4%
Minor Slope Rockfish South	394	234	-160	59.4%
Rebuilding Species				
Canary rockfish	19.3	9.7	-10	50.2%
Pacific ocean Perch	63.3	41.8	-21	66.0%
Darkblotched rockfish	241.5	108.8	-133	45.1%
Widow rockfish	148.1	8.7	-139	5.9%
Yelloweye rockfish	0.6	0.2	0	31.8%
Bocaccio	11.3	5.5	-6	48.3%
Cowcod	1.9	0.3	-2	14.1%

Considerations for Initial Issuance of Quota Pounds (TIQ in January 2011)

When quota pounds are issued for 2011, the following management measures are also necessary (1) RCA boundaries for the rationalized trawl fishery and (2) incidental landing allowances for non-IFQ species for 2011. It is unclear at this time what would happen to the rolled over 2010 trip limit tables (based on a non-TIQ fishery) once the quota pounds are issued by NMFS. If the rolled over 2010 trip limit tables are not replaced and are just removed, then no RCA would be defined and landings of species without quota pounds would be prohibited. Trip limits for non –IFQ species were analyzed in the EIS (Section 2.4.2.1) and can easily be incorporated in to the EA to support the emergency rule to implement the non-IFQ species trip limits.

Therefore, the GMT recommends that the Council request NMFS to implement the landing allowances for non-IFQ species and Pacific whiting coastwide, as described in Tables 1b (North) and 1b (South) in the November 3, 2010 proposed rule (75 FR 67810).

Table 1b (North) to Part 660, Subpart D -- 2011-2012 Limited Entry Trawl Rockfish Conservation Areas and Landing Allowances for non-IFQ Species and Pacific Whiting North of 40°10' N. Lat.

This table describes Rockfish Conservation Areas and incidental landing allowances for vessels registered to a Federal limited entry trawl permit and using groundfish trawl or groundfish non-trawl gears to harvest individual fishing quota (IFQ) species.

Other Limits and Requirements Apply -- Read § 660.10 - § 660.399 before using this table 01012011

TABLE 1b (North)

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	Rockfish Conservation Area (RCA)[6/]:						
1	North of 48°10' N. lat.	shore - modified[7/] 200 fm line[6/]	shore - 200 fm line[6/]	shore - 150 fm line[6/]		shore - 200 fm line[6/]	shore - modified[7/] 200 fm line[6/]
2	48°10' N. lat. - 45°46' N. lat.	75 fm line[6/] - modified[7/] 200 fm line[6/]	75 fm line[6/] - 200 fm line[6/]	75 fm line[6/] - 150 fm line[6/]	100 fm line[6/] - 150 fm line[6/]	75 fm line[6/] - 200 fm line[6/]	75 fm line[6/] - modified[7/] 200 fm line[6/]
3	45°46' N. lat. - 40°10' N. lat.			75 fm line[6/] - 200 fm line[6/]	100 fm line[6/] - 200 fm line[6/]		

Selective flatfish trawl gear is required shoreward of the RCA; all bottom trawl gear (large footrope, selective flatfish trawl, and small footrope trawl gear) is permitted seaward of the RCA. Large footrope and small footrope trawl gears (except for selective flatfish trawl gear) are prohibited shoreward of the RCA. Midwater trawl gear is permitted only for vessels participating in the primary whiting season. **Vessels fishing groundfish trawl quota pounds with groundfish non-trawl gears, under gear switching provisions at § 660.140, are subject to the limited entry groundfish trawl fishery limits in this table, regardless of the type of fishing gear used.**

See § 660.60, § 660.130, and § 660.140 for Additional Gear, Trip Limit, and Conservation Area Requirements and Restrictions. See §§ 660.70-660.74 and §§ 660.76-660.79 for Conservation Area Descriptions and Coordinates (including RCAs, YRCA, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).

State trip limits and seasons may be more restrictive than federal trip limits, particularly in waters off Oregon and California.

5	**Minor nearshore rockfish & Black rockfish**	300 lb/ month
6	**Whiting**	
7	midwater trawl	Before the primary whiting season: CLOSED. -- During the primary season: mid-water trawl permitted in the RCA. See §660.131 for season and trip limit details. -- After the primary whiting season: CLOSED.
8	large & small footrope gear	Before the primary whiting season: 20,000 lb/trip. -- During the primary season: 10,000 lb/trip. -- After the primary whiting season: 10,000 lb/trip.
9	**Cabezon**	
10	North of 46°16' N. lat.	Unlimited
11	46°16' N. lat. - 40°10' N. lat.	50 lb/ month
12	**Shortbelly**	Unlimited
13	**Spiny dogfish**	60,000 lb/ month
14	**Longnose skate**	Unlimited
15	**Other Fish [5/]**	Unlimited

5/ "Other fish" are defined at § 660.11 and include sharks (except spiny dogfish), skates (except longnose skate), ratfish, morids, grenadiers, and kelp greenling.

6/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours, and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to the RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

7/ The "modified" fathom lines are modified to exclude certain petrale sole areas from the RCA.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

Table 1b (South) to Part 660, Subpart D -- 2011-2012 Limited Entry Trawl Rockfish Conservation Areas and Landing Allowances for non-IFQ Species and Pacific Whiting South of 40°10' N. Lat.

This table describes Rockfish Conservation Areas and incidental landing allowances for vessels registered to a Federal limited entry trawl permit and using groundfish trawl or groundfish non-trawl gears to harvest individual fishing quota (IFQ) species.

Other Limits and Requirements Apply -- Read § 660.10 - § 660.399 before using this table 01012011

TABLE 1b (South)

		JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEP-OCT	NOV-DEC
	Rockfish Conservation Area (RCA)6/:						
1	South of 40°10' N. lat.	100 fm line6/ - 150 fm line 6/ 7/					
	All trawl gear (large footrope, selective flatfish trawl, midwater trawl, and small footrope trawl gear) is permitted seaward of the RCA. Large footrope trawl gear and midwater trawl gear are prohibited shoreward of the RCA. **Vessels fishing groundfish trawl quota pounds with groundfish non-trawl gears, under gear switching provisions at § 660.140, are subject to the limited entry groundfish trawl fishery limits in this table, regardless of the type of fishing gear used.**						
	See § 660.60, § 660.130, and § 660.140 for Additional Gear, Trip Limit, and Conservation Area Requirements and Restrictions. See §§ 660.70-660.74 and §§ 660.76-660.79 for Conservation Area Descriptions and Coordinates (including RCAs, YRCA, CCAs, Farallon Islands, Cordell Banks, and EFHCAs).						
	State trip limits and seasons may be more restrictive than federal trip limits, particularly in waters off Oregon and California.						
2	**Longspine thornyhead**						
3	South of 34°27' N. lat.	24,000 lb/ 2 months					
4	**Minor nearshore rockfish & Black rockfish**	300 lb/ month					
	Whiting						
	midwater trawl	Before the primary whiting season: CLOSED. -- During the primary season: mid-water trawl permitted in the RCA. See §660.131 for season and trip limit details. -- After the primary whiting season: CLOSED.					
	large & small footrope gear	Before the primary whiting season: 20,000 lb/trip. -- During the primary season: 10,000 lb/trip. -- After the primary whiting season: 10,000 lb/trip.					
5	**Cabezon**	50 lb/ month					
6	**Shortbelly**	Unlimited					
7	**Spiny dogfish**	60,000 lb/ month					
8	**Longnose skate**	Unlimited					
9	**California scorpionfish**	Unlimited					
10	**Other Fish 5/**	Unlimited					

5/ "Other fish" are defined at § 660.11 and include sharks (except spiny dogfish), skates (excluding longnose skate), ratfish, morids, grenadiers, and kelp greenling.

6/ The Rockfish Conservation Area is an area closed to fishing by particulary gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours, and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to the RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

7/ South of 34°27' N. lat., the RCA is 100 fm line - 150 fm line along the mainland coast; shoreline - 150 fm line around islands.

To convert pounds to kilograms, divide by 2.20462, the number of pounds in one kilogram.

RCA for a Rationalized Trawl Fishery in 2011

Under a rationalized fishery, the Council maintains the ability to adjust the RCA as a routine inseason management measure. Under the final preferred alternative for 2011-2012, the Council maintained the 2010 RCA configuration, rejecting alternatives to reconfigure the 2011 RCA for the start of the year. The Council cautioned that while individual accountability is anticipated to reduce bycatch, the success of the program needs to be evaluated before adopting a more liberal RCA structure.

New information became available to the Council at this meeting, regarding higher than anticipated mortality of darkblotched rockfish in 2009 (Agenda Item H.2.b, Supplemental NMFS

Total Mortality Report) and in 2010 (Agenda Item H.3.b, Supplemental GMT Report). At this meeting, the Council could consider changes to the RCA that will apply to vessels fishing their quota in the rationalized fishery, beginning in January 2011. **In light of this new data, the Council could consider shifting the seaward boundary of the trawl RCA north of 40°10' N. lat. seaward in summer months to close some areas where darkblotched are encountered.** However, the GMT notes that one of the benefits of the rationalized fishery is to achieve individual accountability of catch and bycatch. If the Council thinks that a change is warranted, from the RCA structure adopted in June 2010, then they could request that NMFS consider changing the trawl RCA boundaries for January 2011.

Sablefish North of 36° N. latitude

The 2010 sablefish OY north of 36° N. latitude is 6,471 mt and under the delay in implementing the 2011-2012 harvest specifications, the higher OY and the associated allocations and management measures (e.g., trip limits and limited entry fixed gear tiers) would continue to be in place when the 2010 regulations rollover into 2011. Under the Council's final preferred alternative for 2011, the ACL would be reduced to 5,515 mt and the proposed allocations and management measures would be adjusted accordingly. There are conservation and management concerns with allowing the 2010 OY and higher allocations and management measures to remain in place for the start of 2011. For example, the sablefish tiers for the limited entry fixed gear fleet will begin being fished on the April 1 fishery start date and it would be very difficult, if not impossible, to reduce the tiers when the lower sablefish ACL and associated allocations are published (as late as April 29)in the 2011-2012 final rule. **As such, the GMT recommends that the Council request that NMFS consider the lower sablefish harvest specifications and associated tier limits as part of the analysis in the environmental assessment and emergency rule package proposed by NMFS (Table 12 and Table 13).** The sablefish harvest specifications and allocations are the same as what was decided under the 2011-2012 harvest specifications process and included in the 2011-2012 proposed rule.

Table 12. Proposed sablefish allocations for 2011, based on the Council recommended and NMFS proposed 2011 sablefish OY (in mt).

						LE Trawl			LE FG			Open Access		
Year	**Sablefish OY N of 36° N lat**	**Tribal Share a/**	**Research, Rec., EFP b/**	**Non-Tribal Comm. Share**	**LE Share**	**LE Trawl Share**	**At-sea Whiting Set Aside**	**Non-Whiting Trawl**	**LE FG Share**	**LE FG Primary**	**LE FG DTL**	**OA Share**	**Incidental OA removal**	**OA Fi**
2011	5,515	552	22.1	4,941	4,477	2,597	50	2,547	1,880	1,598	282	464	17	4

a/ This is the total tribal share, which is reduced by 1.5% to account for discard mortality.
b/ In 2009 and 2010 the incidental open access amount came off the top, where as in 11-12 it comes off the OA share per the order of operations outlined in Amendment 21.

Table 13. Proposed 2011 limited entry fixed gear sablefish tier limits based on the Council recommended and NMFS proposed 2011 sablefish OY of 5,515 mt.

Tier	Amount
1	41,379 lb
2	18,809 lb
3	10,748 lb

Fixed Gear Sablefish North of 36° N Lat.: Yelloweye Rockfish Impacts

In response to Council guidance on yelloweye rockfish apportionment using the June 2010 Scorecard, the GMT determined that the 2010 regulations that automatically roll over to 2011 may result in yelloweye rockfish impacts at or below the adjusted scorecard value (i.e., projected impacts are at 0.7 mt, the scorecard at 0.9 mt). Under current projections, the 0.9 mt could even accommodate moving the 125 fm line of Oregon in to 100 fm. Again, the Council's preferred yelloweye ACT of 17 mt would allow 1.3 mt, which coincidentally equals the estimate of total catch in these fisheries during 2009.

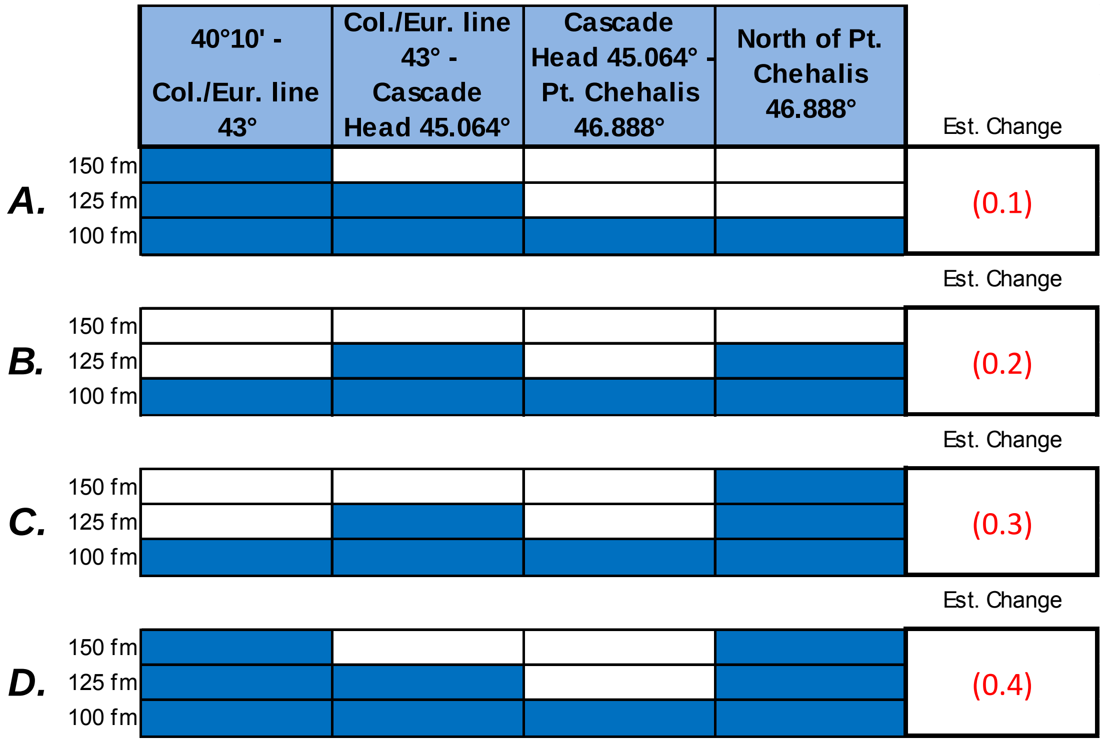
Yet as we highlighted in the first inseason statement, at this point we are unsure how bycatch rates will change in the model once updated with the new depth and area specific bycatch rates from 2009. We are fairly certain that projected impacts will increase and the 0.9 mt may be insufficient even with the 125 fm line left in place.

The Council may thus wish to consider pushing the RCA boundaries in one or more of the areas seaward. Table 14 reproduces the options available to the Council as routine management measures that we presented in our earlier report. However, without the new bycatch rates incorporated, we are unsure how these projected reductions might change.

The option most likely to achieve further reductions in yelloweye bycatch involves moving the area North of Pt. Chehalis to 125 fm or 150 fm. As we highlighted earlier, either change has the effect of eliminating access to dogfish in that area. This fishery has a limited window from February to June so an adjustment back to 100 fm in April would allow dogfish targeting during part of that season.

On the timing of catch in the non-nearshore fisheries, our rough estimate is that 30-40 percent of sablefish catch occurs by April 1. And last June, we estimated that 50 percent of the catch would then have accrued by the end of June. Yelloweye bycatch rates are expressed in terms of landed sablefish catch, so with an assumption that the rate holds true throughout the year, yelloweye projected impacts follow these same projections. Yet yelloweye catch is rare and observed only few times during the year making this assumption questionable.

Table 14. Estimated reductions in projected yelloweye bycatch (mt) in the non-nearshore fixed gear fisheries under four alternative configurations of the seaward non-trawl RCA boundary. The shaded areas indicate depths closed by the non-trawl RCA seaward boundary.



Sablefish Daily Trip Limit (DTL) Fisheries North of 36° N. lat.

LIMITED ENTRY

The sablefish allocation for the Limited Entry Fixed Gear sablefish DTL fishery north of 36^{o} N. latitude would need to be decreased from 321 mt in 2010 to 282 mt in 2011, under a lower OY/ACL. The GMT used a recently updated model to help predict landings of sablefish for this limited entry sablefish DTL fishery (see Appendix A, Description of Projection Models, 2011-2012 Groundfish Harvest Specifications, Draft Environmental Impact Statement). Using this updated model, the GMT identified a set of trip limits that were projected to achieve 90% of the allocation for 2011, or 254 mt (Table 15; See the 2011-2012 DEIS).

Table 15. Trip limit options for the Limited Entry Fixed Gear sablefish DTL fishery north of 36^{o} N. latitude for 2011. The allocation for this fishery under the proposed 2011 OY would be 282 mt. Option 1 represents DEIS-proposed trip limits, Option 2 represents trip limits shown in the 2010 regulations, and option 3 represents trip limits that were projected to attain 100% of the allocation.

Option	Weekly trip limit (lbs)	Bimonthly trip limit (lbs)	Projected landings (mt)	Percent of allocation landed
1 (2011 DEIS)	1,900 (Jan-Dec)	6,500 (Jan-Feb) 7,500 (Mar-Oct) 6,000 (Nov-Dec)	254	90%
2 (2010 Regs)	1,750 (Jan-Dec)	7,000 (Jan-Jun) 8,500 (Jul-Oct) 8,000 (Nov-Dec)	298	106%
3	2,000 (Jan-Dec)	7,000 (Jan-Jun) 8,000 (Jul-Dec)	284	100%

Under the current situation, where the 2010 regulations will roll over and management measures described in the 2011-2012 DEIS will be delayed, projected landings using 2010 trip limits will exceed the proposed 2011 harvest guideline by 6% (Table 15). Hence, inseason trip-limit adjustments are necessary to ensure that the allocation is not exceeded.

Two options are presented in Table 15 that are projected to reach 90% or 100% of the allocation. The GMT discussed the pros and cons of modeling to attain 90% versus 100% of the allocation for this fishery (H.3.b, Supplemental GMT Report, November 2010). The GMT recommends adopting trip limits shown under option 3, where the goal is to reach 100% of the allocation, because there will be opportunities to adjust trip limits later in 2011 if catch rates are higher than expected.

Weekly trip limits are not included in the projection model because this type of limit did not significantly affect landings (see the 2011-2012 DEIS). However, retaining some level of weekly trip limits is recommended because we are uncertain of the impacts if weekly limits were completely removed. Weekly trip limits should be no less than 25% of the bi-monthly limit to improve safety and improve efficiency relative to the number of weekly trips needed to catch the bi-monthly limit (H.3.b, Supplemental GMT Report, November 2010; 2011-2012 DEIS).

The GMT recommends implementing option 3 trip limits beginning January 1, 2011, which is cumulative trip limits of 2,000 lbs/week for Periods 1 – 6 not to exceed 7,000 lbs/2 months for Periods 1 – 3 and 8,000 lbs/2 months for Periods 4 – 6..

OPEN ACCESS

The sablefish allocation for the Open Access Fixed Gear sablefish DTL fishery north of 36^{o} N. latitude will decrease from 529 mt in 2010 to 464 mt in 2011. The GMT did not recommend changes to the daily trip limits for this fishery in the 2010-2011 DEIS. Hence, the trip limits under the 2010 regulations for this fishery are equal to those proposed in the 2010-2011 DEIS. However, if left unchanged, the regulations that would become effective on January 1, 2011 are projected to exceed the 2011 allocation by 15% (Table 16). Hence, the GMT provides two options that were projected to either (a) reach the 100% allocation or (b) reach 90% of the allocation.

Table 16. Trip limit options for the Open Access Fixed Gear sablefish DTL fishery north of 36^{o} N. latitude for 2011. The 2011allocation would be based on the lower of 2010 and 2011 (ACL), which equals 464 mt. Option 1 represents DEIS-proposed trip limits and 2010 trip limits, whereas options 2 and 3 represent trip limits that were projected to attain 100% and 90% of the 464 mt allocation, respectively.

Option	Daily trip limit (lbs)	or One landing per week (lbs)	Bimonthly trip limit (lbs)	Projected landings (mt)	Percent of allocation (464 mt) landed
1 (2011 Proposed Allocations & 2010 Management Measures)	300 (Jan-Dec)	800 (Jan-Jun) 950 (Jul-Dec)	2,400 (Jan-Jun) 2,750 (Jul-Dec)	536	115%
2	300 (Jan-Dec)	950 (Jan-Jun) 1,200 (Jul-Dec)	1,900 (Jan-Jun) 2,250 (Jul-Dec)	467	101%
3	300 (Jan-Dec)	800 (Jan-Jun) 950 (Jul-Dec)	1,600 (Jan-Jun) 1,850 (Jul-Dec)	419	90%

Two options, in addition to the 2010 trip limits, are presented in Table 16 that are predicted to result in 100% or 90% attainment of the allocation. The GMT recommends adopting trip limits shown under option 2, where the goal is to reach 100% of the allocation, because there will be opportunities to adjust trip limits later in 2011 if catch rates are higher than expected.

The model used to project landings for this fishery does not use daily or weekly trip limit levels as dependent variables because they were not significant in the model runs. The GAP asked the GMT to consider retaining the daily trip limit at 300 lbs/day and increasing the weekly limit to 50% of the bimonthly limit for consistency with proposed trip limits south of 36^{o}. There was concern that a large discrepancy in weekly limits between the north and south may cause a large shift in effort.

The GMT recommends implementing option 2 trip limits beginning January 1, 2011, which is (a) 300 lbs/day OR one landing per week not to exceed 950 lbs and a cumulative bimonthly limit of 1,900 lbs/2 months (Periods 1 - 3) and (b) 300 lbs/day OR one landing

per week not to exceed 1,200 lbs and a cumulative bimonthly limit of of 2,250 lbs (Periods 4 - 6).

Limited Entry and Open Access Sablefish Fishery South of 36° N. lat.
Under Agenda Item H.3.b, the GMT requested Council guidance to determine the catch sharing percentages to use as a basis for modeling trip limits for the limited entry and open access sectors. The Council chose to use a 55%:45% (LE:OA) sharing based on the historical landings of non-trawl vessels from 2000-2009.

Limited Entry
Under the 2011-12 spex, a new model was constructed to predict bimonthly sablefish landings by the LE sector south of 36° N. lat. based on limited entry trip limits for that region. This model is similar in structure to the one used for LE DTL north of 36° N latitude. Based on the catch sharing provided by the Council (55%), the LE sector would receive 403 mt out of the non-trawl 733 mt ACL. The GMT modeled the following trip limits for Council consideration (Table 17). The options are meant to bracket potential risk given the new model.

Table 17. Range of trip limits for the limited entry sector (403 mt, 55% of catch sharing)

	Trip Limit	Mt	% of catch sharing
Option 1	2,000 lb/week	341	85%
Option 2	2,100 lb/week	387	96%
Option 3	2,100 lb/week (periods 1-3) 2,200 lb/week (periods 4-6)	400	99%

Open Access
Under the 2011-12 spex, the GMT also constructed a new trip limit model for the open access sector which is similar to the model used for the OA DTL north of 36° N latitude. Due to a dramatic increase in the number of vessels participating in the fishery, a lack of contrast in historical trip limits, and delays in processing of recent fish ticket data, the GMT constructed trip limits based on the following assumptions: 50 vessels participate in the open access sector and every vessel achieves the bi-monthly limit (Table 18). Actual catches may be lower or higher than those predicted based on the actual number of vessels and level of participation.

Based on the catch sharing provided by the Council (45%), the OA sector would receive 330 mt out of the 733 mt non-trawl ACL. The GMT constructed the following trip limits for Council consideration.

Table 18. Range of trip limits for the open access sector (330 mt, 45% of catch sharing)

	Trip Limit	mt	% of catch sharing
Option 1	300 lb/day, 1,000 lb/week, not to exceed 2,000 lb/2 months	272	82%
Option 2	300 lb/day, 1,100 lb/week, not to exceed 2,200 lb/week	299	91%
Option 3	300/lb day, 1,200 lb/week, not exceed 2,400 lb/2 months	327	99%

The GMT acknowledges that the choice of a trip limit is a matter of risk, particularly in a situation where there is no formal allocation and the actions of one sector can affect another. Any of the combination of trip limits presented will keep both sectors at or below the Conception Area non-trawl ACL.

Fixed Gear Nearshore

In response to Council guidance on yelloweye rockfish apportionment using the June 2010 Scorecard, the GMT determined that no additional management measures will be needed for the nearshore commercial fishery prevent exceeding harvest of yelloweye rockfish. Adjustments made by the Council increased the allocation of yelloweye rockfish for the fixed gear nearshore fishery from 0.9 to 1.1 mt. The additional 0.2 mt raised the allocation of yelloweye rockfish to the level shown as the Final Preferred Alternative in the 2011-2012 DEIS. Hence, the Final Preferred Alternative management measure described in the 2011-2012 DEIS for fixed gear nearshore fisheries will maintain harvest of yelloweye rockfish below 1.1 mt.

The following table (Table 19) provides landings of targeted nearshore species (mt) for the fixed gear nearshore fishery for January – June relative to the entire year. Landings during the first half of the year on average are less than 45% for each of 2007, 2008, and 2009. Hence, the majority of impacts to overfished species in this fishery occur during the second half of the year.

Table 19. Summary of target species landings in the nearshore fishery through June 30 for 2007-2009

	2007	2008	2009
Landings through June 30	182.5	221.0	241.1
Annual Landings	491.6	504.7	456.8
% of annual landings	37.1%	43.8%	52.8%

<u>Minor Nearshore Rockfish North of 40°10’ N. lat.</u>

The GMT examined the performance of current management measures to keep total mortality within the proposed ACL of 99 mt. WGCOP reports indicate that under the same management measures, average total mortality for 2006-2009 has been 97.3 mt (Table 20), even though the harvest guideline for some of those years was 150 mt. The commercial total mortality estimates for 2007 are extremely high and may be an overestimate. The GMT is working with WGCOP to confirm this value.

The GMT does not recommend any changes to management measures at this time because past management measures have, on average, shown to stay within the proposed 99 mt ACL.

Table 20. Total mortality of minor nearshore rockfish north from 2006-2009 compared to the proposed 2011 ACL. Source: Total Mortality Reports (2006-2009)

	Total Mortality (mt)					
	2006	2007	2008	2009	Average	Proposed 2011 ACL
North of 40°10’ N latitude	96	133	97	63	97.3	99

Petrale Seasonal Catch Distribution

We offer Table 21 and Figure 1 to show how petrale catches have distributed throughout the fishing year. The Trawl Individual Quota (TIQ) program has the potential to change these distributions. Some have argued that there will be little trawl effort at the start of the year. Others speculate that some individuals may wish to fish the bulk of their petrale quota in the first few months of the year when petrale can be found in spawning aggregations and harvested with a high catch per unit effort. We just do not know how the dynamic will change. Holding back the full allocation of QP until April obviously limits an individual’s choice of when to fish somewhat, yet those wishing to fish their full allocation might be able to do so with QP trades.

Table 21. Monthly LE non-whiting bottom trawl landings of petrale sole as a percentage of all groundfish landings for 2008.

Month	Petrale	Trawl grnd	Pet/Twl grnd
Jan	**478**	**1,706**	**28%**
Feb	481	2,294	21%
Mar	176	2,250	8%
Apr	89	2,206	4%
May	73	2,400	3%
Jun	97	1,755	6%
Jul	89	2,127	4%
Aug	82	1,746	5%
Sep	90	2,228	4%
Oct	70	2,337	3%
Nov	145	2,034	7%
Dec	348	1,752	20%

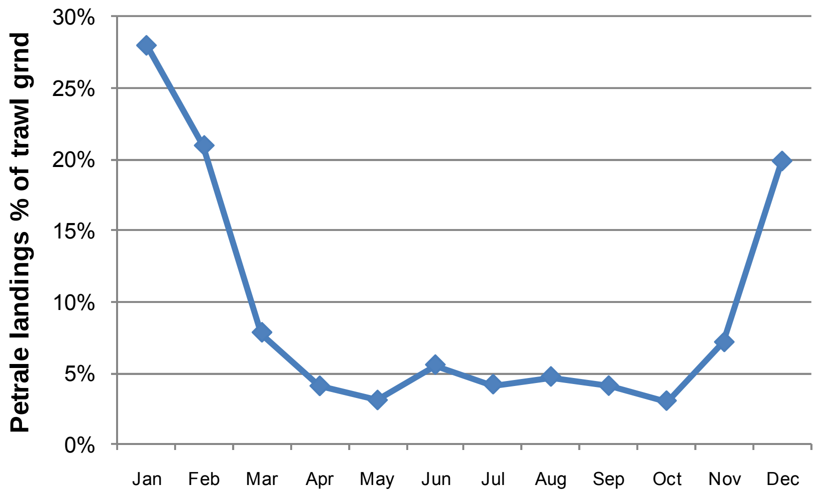


Figure 1. Monthly LE non-whiting bottom trawl landings of petrale sole as a percentage of total groundfish landings for 2008.

Non-trawl Allocation of Petrale Sole

Because of the overfished declaration for petrale sole, the Council temporarily suspended the Amendment 21 allocations and revisited the allocation of the rebuilding ACL among the trawl and non-trawl sectors during the 2011-12 SPEX. The Council chose to allocate an *amount* to the non-trawl sector instead of a *proportion*. The non-trawl amount was 35 mt.

We raise this point in case the Council wishes to give NMFS guidance on how to handle the split between trawl and non-trawl in an emergency rule and if NMFS does not approve the Council's preferred rebuilding ACL for petrale sole for 2011. If the Council intended that 35 mt to apply across a wide range of ACL levels, NMFS decision on the 2011 ACL might be irrelevant. If, however, the Council would prefer to maintain flexibility on the non-trawl allocation, then guidance from the Council at this time might be helpful.

Figure 2 reproduces the non-trawl catch data we presented to the Council in June.[2] This information was also presented to the Council in the Amendment 21 DEIS.
Table 22 shows how the non-trawl portion of the rebuilding ACL under the three alternative rebuilding ACLs considered by the Council in June 2010. As a reminder, Alternative 3 is the Council's preferred alternative.

[2] PFMC June 2010 Briefing Book, Agenda Item B.7.b, Supplemental GMT Report:

> The GMT considered Council guidance to suspend the allocations under Amendment 21 while petrale is rebuilding. The GMT examined total non-trawl catch from the Amendment 21 DEIS and noted a marked decrease in catch in the non-trawl sectors beginning in 2004 [represented in Figure 2]. Whether this is the result of management constraints, such as RCA configurations, or improved total mortality accounting through the West Coast Groundfish Observer Program is unclear; however, the general reduction appears to have held for the last several years. As such, similar to the approach suggested by the GMT for other species' "off the top" estimates, the Council may want to establish an allocation such that it accommodates what may be expected in non-trawl sectors without needing to change the trawl allocation inseason or exceeding the ACL. As shown in Figure 2, the highest catch in recent years is 12.2 mt.

Table 22. Trawl allocation under the Council's three petrale rebuilding ACL alternatives with a non-trawl allocation of 35 mt.

	Alternative 1	**Alternative 2**	**Alternative 3**
ACL (mt)	459	776	976
Set aside (mt)	65.4	65.4	65.4
Non-trawl (mt)	35	35	35
Trawl (mt)	358.6	675.6	875.6
Non-trawl (% of ACL)	7.6%	4.5%	3.6%

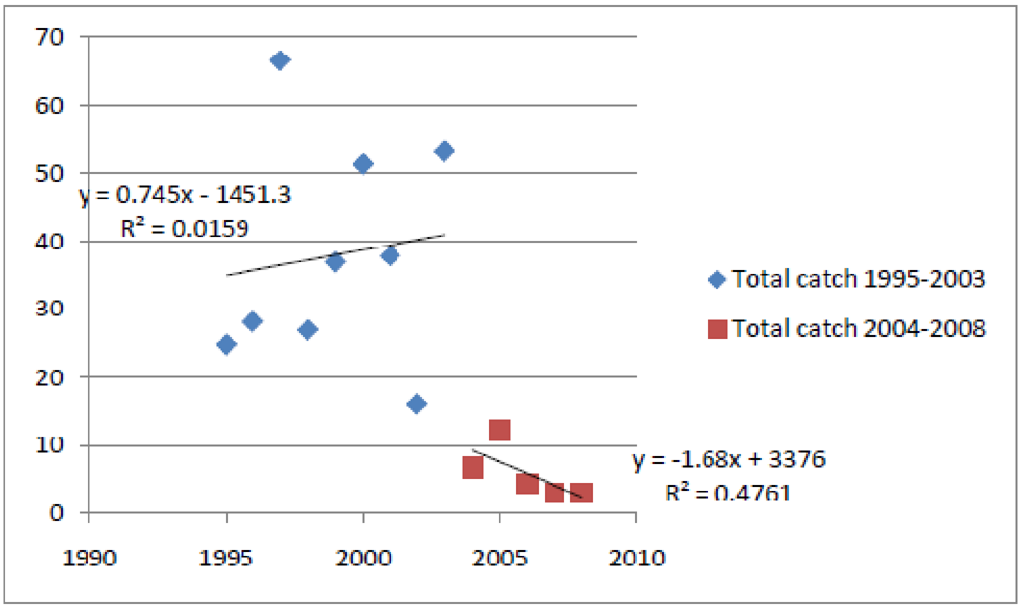


Figure 2. Non-trawl catch of petrale sole (mt), 1995-2008.

Longnose skate management

The 2009 Total Mortality report shows that catch of longnose skate exceeded the OY by 8 percent (Agenda Item H.2.b, Supplemental NMFS Mortality Report). With the precautionary adjustment to the OY, this catch represents only 48 percent of the ABC.

Longnose skate was removed from the Other Fish complex and given a stock specific OY for the first time in 2009. With this stock specific OY in place, the groundfish regulations require landings of longnose skate to be sorted.

There is no trip limit in place now and no trip limit scheduled for 2011. Up until 2009, the best available catch information suggested that catches of longnose skate were around 800 mt per year.

Information on the total catch of skates catch has been highly uncertain because of the practical challenges involved with sampling these species (e.g., they can be large or landed in mutilated form), because many skates are discarded, and because skates have traditionally been a lower priority for management. The sorting requirement for longnose skate and the growing time series of West Coast Groundfish Observer Program (WCGOP) data on discards have improved our catch tracking ability and will continue to improve catch estimates.

Table 12 of the Total Mortality report shows that 87.7 percent of the estimated longnose catch occurred in the non-whiting trawl fleet (1,275.4 mt) and 11.9 percent in the non-nearshore fixed gear fisheries (173.3 mt). Tables 2a and Tables 2b of that report show that trawl catch of longnose occurs both north and south of 40º 10’ N. latitude and both seaward and shoreward of the RCA.

It appears likely that catch may also exceed the OY in 2010. PacFIN data, which is current through September in OR and August in CA and WA, shows that landings in 2010 are already 97.6 percent of 2009 landings. We will not have information on 2010 discarded catch until the 2010 Total Mortality report is released at this time next year.

Thinking toward 2011, the 100 percent observer coverage of the trawl individual quota program could give us much more timely information on total catch. However, Amendment 20 does not include longnose skate as an IFQ management species and so do not know whether catch will be reported on the same timeline as for stocks that are managed with QP/IBQ. **The GMT requests that information on longnose skate mortality from the observer program be provided on a timely basis to facilitate the potential need for inseason management to avoid future overages of the OFL.**

The 2011-12 SPEX DEIS does include an analysis of a trip limit for longnose skate. The Council considered implementing the limit for the trawl sector yet, based on our recommendation and review of recent catch levels, the trip limit was thought to be unnecessary.

Because a trip limit was analyzed in the DEIS, the Council can implement a trip limit as a routine management measure after the SPEX regulations go into effect (expected in April 2010). We would need more time to review and analyze the latest information on catch and discard before bringing the Council options on trip limits for the trawl and/or non-nearshore fixed gear fisheries.

As the Council well knows, trip limits are limited in their ability to affect total catch. A trip limit can reduce the economic incentive to target a stock, yet on its own, a trip limit creates no direct incentive to avoid catch that is incidental. Vessels will pursue target stocks and incidental catch accrues. If the ratio of catch to target stocks is reasonably known, trip limits set on target stocks can indirectly control the catch of incidental stocks. However if the trip limit is set far from the incidental encounter rate, the effect of the limit will be either to constrain the catch of target stocks unnecessarily or induce discard of incidental catch without reducing total catch overall.

As an alternative to trip limits, the Council could also consider adding longnose skate as a quota species or implementing a sector specific ACL to control total catch. We discussed whether the RCA boundaries could used to lower bycatch and concluded that they probably could not because of the wide range over which catch was observed. We did not analyze alternatives to trip limits in the 2011-12 DEIS and so other catch control measures would have to be implemented by a regulatory or FMP amendment (i.e. they would not qualify as routine management measures).

As we understand it, the Council chose to not include longnose skate as a quota species, at least in part, because of the difficulty in allocating quota share (QS). The uncertain landings information makes allocation based on permit landings history impractical. The Council could consider basing allocations on equal sharing or on some pro-rata or bycatch rate as is being done for halibut IBQ and QS for overfished species. These alternative allocation schemes were not analyzed for longnose skate during the development of Amendment 20.

2009 Total Mortality Report

We have touched on the 2009 Total Mortality Report multiple times during the two inseason sessions. As management requires, we spend most of our focus on those stocks for which catch was higher than expected (i.e. darkblotched and longnose skate). We end here with some brief perspectives on those stocks for which catch was considerably lower than expected.

As summarized in Table 20 of the Total Mortality report, total catch was lower than the OY for all rebuilding species but darkblotched. POP catch came in at 96 percent of the OY yet catch for the other stocks all came in considerably less than the OY. For yelloweye, the Council had planned 17 mt for yelloweye and catch came in at 11 mt. Cowcod management measures were targeted at 3 mt and set in contemplation that catch might exceed that amount yet total catch estimate came in at just less than 1 mt. Widow rockfish catch came in at 37 percent of the OY, bocaccio at 24 percent, and canary at 36 percent. The canary catch of 38 mt is perhaps most surprising to us given the relative difficulty we have had at keeping canary catch within the OY.

The 2009 Total Mortality report again underscores the challenges of catch projection. At this meeting, the Council has been considering what management measures are necessary to keep yelloweye catches within 14 mt. Based on the 2009 estimated catch one might think the 2009 management measures would be sufficient. Yet the safe bet is that 2010 will be completely different. The Council made adjustments mid-season 2010 to bring catch projection to 14 mt. We of course will not be surprised if those changes produce catches above 14 mt.

We use the best information and data we have available, yet catch is invariably uncertain. With data collected under relatively consistent conditions our projection models can achieve reasonable accuracy. Yet as the Council well knows, management measures have changed significantly since RCA management began and we often make projections with limited data. We expect our models to keep improving, yet also expect estimates for rarely caught species like yelloweye and cowcod to remain uncertain and variable. Table 23 shows how the Council's 2009 planned catch compares to the total mortality estimates for cowcod, canary, and yelloweye.

Management uncertainty as an integral piece in the analysis of the Council's rebuilding plans. The Council considers the needs of fishing communities largely on our evaluation of the management measures needed to keep catches within alternative harvest amounts during the SPEX analysis. Yet as we have continued this approach, and as shown by the 2009 catch estimates, we find more examples to show how our evaluations are just not that precise. And where we underproject catch, the Council has to enact more restrictive management measures to keep catch within the established limits. This of course means that the management measures have more of an adverse impact on fishing communities than was contemplated when the needs of fishing communities were considered in the analysis.

In close, we urge the Council and NMFS to not overlook management uncertainty in the continued analysis of Amendment 16-5. In future cycles, we hope to have opportunity to consider how imprecision in our projections can factor more explicitly into the analysis of the Council's rebuilding plans.

Table 23. The 2009 Total Mortality estimates compared to the Council's planned mortality (as reflected by scorecard projections/harvest guidelines/bycatch caps) for selected fishery sectors and other activities.

Cowcod	**Total Mortality**	**Scorecard**	+/-
Bottom Trawl	0.5	1.3	**0.8**
Non-nearshore	0.1	0.0	(0.1)
Nearshore	0.0	0.0	0.0
CA rec	0.2	0.3	**0.1**
Research	0.1	0.2	**0.1**
Other Incidental	0.0	0.3	**0.3**

Canary	**Total Mortality**	**Scorecard**	+/-
Bottom Trawl	8.9	21.8	**12.9**
Non-nearshore	0.3	2.8	**2.5**
Nearshore	3.5	3.5	0.0
CP	0.2	6.1	**5.9**
Mothership	0.6	4.3	**3.7**
Shoreside Hake	1.8	7.6	**5.8**
Tribal Hake	1.7	1.4	(0.3)
Tribal Non-Hake	5.9	5.2	(0.7)
WA rec	0.5	4.9	**4.4**
OR rec	3.0	16.0	**13.0**
CA rec	11.2	22.9	**11.7**
Research	0.5	8.0	**7.5**
Other Incidental	0.0	3.6	**3.6**

Yelloweye	**Total Mortality**	**Scorecard**	+/-
Bottom Trawl	0.1	0.6	**0.5**
Non-nearshore	1.3	0.9	(0.4)
Nearshore	0.5	1.2	**0.7**
WA rec	1.6	2.7	**1.1**
OR rec	2.0	2.5	**0.5**
CA rec	3.8	2.8	(1.0)
Research	0.7	2.4	**1.7**
Other Incidental	0.4	0.6	**0.2**
Tribal FG	0.3	2.3	**2.0**

GMT Recommendations:

1. **Consider whether to recommend to NMFS that the Council be allowed flexibility to adjust the off the top deductions in April 2011.**
2. **Due to the delay in implementing the 2011-2012 harvest specifications and management measures and the uncertainty surrounding the 2011 overfished species harvest specifications, the Council may wish to retain flexibility for adjusting the two-year trawl and non-trawl allocations for these species in 2011, as needed.**
3. **Consider implementing the non-routine inseason action regulations recommended by the states to allow the recreational fisheries to begin 2011 as proposed in the 2011-2012 SPEX DEIS.**
4. **Consider trip limits for 2011 if rationalization is delayed.**
5. **Request NMFS to implement the landing allowances for non-IFQ species and Pacific whiting coastwide, as described in Tables 1b (North) and 1b (South) in the November 3, 2010 proposed rule (75 FR 67810).**
6. **Request that NMFS consider the lower sablefish harvest specifications and associated tier limits as part of the analysis in the environmental assessment and emergency rule package proposed by NMFS (Table 12 and Table 13).**
7. **For the Limited Entry Fixed Gear Sablefish DTL fishery north of 36o N. latitude beginning January 1, 2011, implement cumulative trip limits of 2,000 lbs/week for Periods 1 – 6 not to exceed 7,000 lbs/2 months for Periods 1-3 and 8,000 lbs/2 months for Periods 4-6.**
8. **For the Open Access Fixed Gear Sablefish DTL fishery north of 36o N. latitude beginning January 1, 2011, implement trip limits for Periods 1-3 of 300 lbs/day OR one landing per week not to exceed 950 lbs and a cumulative bimonthly limit of 1,900 lbs/2 months and for Periods 4-6 of 300 lbs/day OR one landing per week not to exceed 1,200 lbs and a cumulative bimonthly limit of 2,250 lbs.**
9. **Consider trip limits for the limited entry and open access fixed gear fisheries south of 36° N, as outlined in Table 17 and Table 18.**
10. **The GMT requests that information on longnose skate mortality from the observer program be provided on a timely basis to facilitate the potential need for inseason management to avoid future overages of the OFL.**

Projected mortality impacts (mt) of overfished groundfish species for Sept 2010 updated based on updated research and latest bottom trawl, Pacific whiting, and Oregon recreational data.

Fishery	Bocaccio b/	Canary	Cowcod	Dkbl g/	POP	Widow	Yelloweye
Limited Entry Trawl - Non-whiting	**22.4**	**11.9**	0.3	**218.8**	**103.1**	**14.4**	0.3
Limited Entry Trawl - Whiting							
At-sea whiting motherships a/		3.3		6.0	0.5	67.0	0.0
At-sea whiting cat-proc a/		4.8		8.5	0.5	95.0	0.0
Shoreside whiting a/		5.9		10.5	**16.5**	117.0	0.0
Tribal whiting		4.3		0.0	7.2	5.0	0.0
Tribal							
Midwater Trawl		3.6		0.0	0.0	40.0	0.0
Bottom Trawl		0.8		0.0	3.7	0.0	0.0
Troll		0.5		0.0	0.0		0.0
Fixed gear		0.3		0.0	0.0	0.0	2.3
Fixed Gear Sablefish	0.0	2.5	0.0	4.5	0.4	0.0	0.9
Fixed Gear Nearshore	0.3	3.6	0.0	0.0	0.0	0.3	1.1
Open Access: Incidental Groundfish	0.8	1.7	0.0	15.0	0.0	3.3	0.3
Recreational Groundfish e/							
WA		20.9					**5.4**
OR						1.0	
CA	67.3	22.9	0.3			6.2	2.7
EFPs	11.0	1.3	0.2	1.5	0.1	11.0	0.2
Research: Includes NMFS trawl shelf-slope surveys, the IPHC halibut survey, and expected impacts from SRPs and LOAs.							
	2.0	4.5	0.2	2.0	2.0	5.7	**0.5**
TOTAL	103.8	92.7	1.0	266.8	134.0	365.9	13.7
2010 OY f/	288	105	4.0	330	200	509	14
Difference	184.2	12.3	3.0	63.2	66.0	143.1	0.3
Percent of OY	36.0%	88.3%	25.0%	80.8%	67.0%	71.9%	97.9%
Key		= either not applicable; trace amount (<0.01 mt); or not reported in available data					

a/ Non-tribal whiting values for canary, darkblotched, and widow reflect bycatch limits for the non-tribal whiting sectors. All other species'

b/ South of 40°10' N. lat.

e/ For California, values in scorecard represent projected impacts for all species except canary and yelloweye rockfish, which are the prescribed harvest guidelines. For Washington and Oregon, the canary value represents the HG. For yelloweye, the value represents projected impacts for the Oregon fishery (2.8 mt) through the end of the year and the Washington share of the HG (2.6 mt).

f/ 2009 and 2010 OYs are the same except for darkblotched (291 mt in 2010), POP (200 mt in 2010), and widow (509 mt in 2010).

g/ Regulations specify a commercial harvest guideline of 288 mt (see 75FR39178)

Projected mortality impacts (mt) of overfished groundfish species for 2010 updated based on June inseason action on YE and trawl inseason proposals.

Fishery	Bocaccio b/	Canary	Cowcod	Dkbl	POP	Widow	Yelloweye	Council Guidance Yelloweye
Limited Entry Trawl - Non-whiting	**7.5**	**12.3**	**0.3**	**190.2**	**94.5**	**15.4**	**0.3**	**0.3**
Limited Entry Trawl - Whiting								
At-sea whiting motherships a/		3.3		6.0	0.5	67.0	0.0	0.0
At-sea whiting cat-proc a/		4.8		8.5	0.5	95.0	0.0	0.0
Shoreside whiting a/		5.9		10.5	4.7	117.0	0.0	0.0
Tribal whiting		4.3		0.0	7.2	5.0	0.0	0.0
Tribal								
Midwater Trawl		3.6		0.0	0.0	40.0	0.0	0.0
Bottom Trawl		0.8		0.0	3.7	0.0	0.0	0.0
Troll		0.5		0.0	0.0		0.0	0.0
Fixed gear		0.3		0.0	0.0	0.0	2.3	2.3
Fixed Gear Sablefish	0.0	2.5	0.0	4.5	0.4	0.0	0.9	0.9
Fixed Gear Nearshore	0.3	3.6	0.0	0.0	0.0	0.3	**1.1**	**1.1**
Open Access: Incidental Groundfish	0.8	1.7	0.0	15.0	0.0	**3.3**	0.3	0.3
Recreational Groundfish e/								
WA		20.9					**4.9**	**4.9**
OR						1.0		
CA	67.3	22.9	0.3			6.2	**2.7**	**2.7**
EFPs	11.0	1.3	0.2	1.5	0.1	11.0	**0.2**	**0.1**
Research: Includes NMFS trawl shelf-slope surveys, the IPHC halibut survey, and expected impacts from SRPs and LOAs.								
	2.0	4.5	0.2	2.0	2.0	5.7	**0.5**	**1.3**
TOTAL	88.9	93.1	1.0	238.2	113.6	366.9	13.2	13.9
2010 OY f/	288	105	4.0	**330**	200	509	**14**	**14**
Difference	199.1	11.9	3.0	91.8	86.4	142.1	0.8	0.1
Percent of OY	30.9%	88.7%	25.0%	72.2%	56.8%	72.1%	94.3%	99.3%
Key		= either not applicable; trace amount (<0.01 mt); or not reported in available data						

a/ Non-tribal whiting values for canary, darkblotched, and widow reflect bycatch limits for the non-tribal whiting sectors. All other species' impacts

b/ South of 40°10' N. lat.

e/ Values in scorecard represent projected impacts for all species except canary and yelloweye rockfish, which are the prescribed harvest guidelines.

f/ 2009 and 2010 OYs are the same except for darkblotched (291 mt in 2010), POP (200 mt in 2010), and widow (509 mt in 2010).

GROUNDFISH MANAGEMENT TEAM REPORT ON INSEASON ADJUSTMENTS PART II FOR 2011

Projected mortality impacts (mt) of overfished groundfish species for 2011 under the Council's Final Preferred Alternative.

Fishery	Bocaccio b/	Canary	Cowcod	Dkbl	Petrale	POP	Widow	Yelloweye
Limited Entry Trawl - Non-whiting a/	60.0	20.0	1.8	240.3	871.0	107.0	235.5	0.6
Limited Entry Trawl - Whiting a/								
At-sea whiting motherships		3.4		6.0		7.2	61.2	0.0
At-sea whiting cat-proc		4.8		8.5		10.2	86.7	0.0
Shoreside whiting		5.9		10.5		12.6	107.1	0.0
Tribal whiting		4.3		0.1		7.2	5.0	0.0
Tribal								
Midwater Trawl		3.6		0.0		0.0	40.0	0.0
Bottom Trawl		0.8		0.0	45.4	3.7	0.0	0.0
Troll		0.5		0.0		0.0		0.0
Fixed gear		0.3		0.0		0.0	0.0	2.3
Non-nearshore c/								
LE FG	0.0	1.9		3.5		0.3	0.1	0.8
OA FG	0.0	0.3		0.8		0.1	0.0	0.1
Directed OA: Nearshore c/	0.3	3.0					0.3	1.1
Incidental OA d/	0.7	2.0		15.0	1.0	0.1	3.3	0.2
Recreational Groundfish e/								
WA		2.0						2.6
OR		7.0					1.0	2.4
CA	55.4	14.5	0.2				8.7	3.1
EFPs	11.0	1.3	0.2	1.5	2.0	0.1	11.0	0.1
Research f/	1.7	7.2	0.1	2.1	17.0	1.8	1.6	3.3
TOTAL	129.1	82.8	2.3	288.3	936.4	150.3	561.5	16.6
2011 ACL/ACT g/	263	102	4.0	298	976	157	600	17
Difference	133.9	19.2	1.7	9.7	39.6	6.7	38.5	0.4
Percent of OY	49.1%	81.2%	57.5%	96.7%	95.9%	95.7%	93.6%	97.6%
Key		= either not applicable; trace amount (<0.01 mt); or not reported in available data sources.						

a/ Values for dkbl, POP, and widow reflect Amendment 21 allocations. Bocaccio, canary, cowcod, and yelloweye represent 11-12 allocations.

The allocation to the shoreside whiting sector is only for the Amendment 20 initial allocation. In future years only one allocation will be made to the shoreside sector (whiting and non-whiting).

b/ South of 40°10' N. lat.

c/ Values represent projected impacts under the Council's Final Preferred Alternative for 2011-2012

d/ Mortality estimates are not hard numbers; based on the GMT's best professional judgment.

e/ Values in scorecard represent projected impacts for all species except canary and yelloweye rockfish, which are the prescribed harvest guidelines.

f/ Includes NMFS trawl shelf-slope surveys, the IPHC halibut survey, and expected impacts from SRPs and LOAs.

g/ Values for POP and yelloweye represent ACTs, which is a value less than the ACL to account for management uncertainty.

PFMC
11/8/10