Data Report and Summary Analyses of the West Coast Non-Nearshore Fixed Gear Fishery

October 2008

West Coast Groundfish Observer Program

Prepared by:
National Marine Fisheries Service
Northwest Fisheries Science Center
Fishery Resource Analysis and Monitoring Division
2725 Montlake Blvd. East
Seattle, WA 98112

NWFSC NORTHWEST FISHERIES SCIENCE CENTER

NOAA Fisheries

Table of Contents

INTRODUCTION

Overview

This report summarizes discarded catch data collected by the West Coast Groundfish Observer Program (WCGOP) from three distinct sectors of the fixed gear fishery along the west coast. These include the limited entry (LE) sablefish-endorsed fixed gear fishery from January 1, 2007 through December 31, 2007, the LE non-sablefish-endorsed fixed gear fishery from January 1, 2007 through April 30, 2008, and the open access non-nearshore fixed gear fishery from January 1, 2007 through April 30, 2008. The WCGOP collects at-sea data from LE trawl and fixed gear fisheries, as well as from nearshore, prawn/shrimp, California halibut, and deep-water fisheries. 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 data are used in assessing and managing a variety of groundfish species.

West Coast Fixed Gear Fishery

There are four major components to the west coast fixed gear fishery; the LE sablefish-endorsed fishery, the LE non-sablefish-endorsed fishery, the open access fishery, and the state-permitted nearshore fishery. This report includes three of the four sectors; the nearshore fishery, which generally occurs in depths less than 50 fathoms, is reported separately in "Data Report and Summary Analyses of the West Coast State-Permitted Nearshore Fixed Gear Fisheries." In previous years, the LE sablefish-endorsed and LE non-sablefish-endorsed sectors were reported in separate reports and the open access sector was not reported. To ease review of the fixed gear sectors of the commercial fleet, the WCGOP is now reporting all non-nearshore sectors in one report. Regulations for the three sectors of the west coast fixed gear fishery in this report are set by the Pacific Fishery Management Council (PFMC). The PFMC sets the optimum yield (OY) and harvest guidelines for groundfish species.

The limited entry fixed gear fishery requires a federal groundfish permit to participate. There were 226 LE fixed gear permits in 2007. LE fixed gear permits are either sablefish-endorsed or non-sablefish-endorsed. In addition, all LE fixed gear permits have gear endorsements (longline, pot/trap, or both). Of the 226 LE fixed gear permits in 2007, 164 had sablefish-endorsements. Of these, 131 were associated with longline gear, 29 were associated with pot/trap gear, and 4 were associated with both longline and pot/trap gear. The remaining 62 limited entry non-sablefish-endorsed permits were all associated with longline gear.

The open access fixed gear sector does not require federal or state permits. Therefore, the total number of participants varies widely from year to year. Open access vessels can use any type of hook-and-line or pot/trap gear, including longline, fishing pole, and vertical longline.

West Coast Limited Entry Sablefish-Endorsed Fixed Gear Fishery

Vessels participating in the LE sablefish-endorsed fishery range in size from 33 to 95 feet and operate primarily out of ports in Oregon and Washington. Fishing generally occurs in depths greater than 80 fathoms. Nearly all of the vessels participating in this fishery deliver their iced catch to shoreside processors. Catch in the LE sablefish-endorsed fishery is composed mostly of sablefish, with bycatch primarily composed of spiny dogfish shark, Pacific halibut, rockfish species, and skates. Vessels retain and deliver to processors the portion of catch that is marketable and permitted to be landed. The portion of their catch which is not marketable or for which regu-

lations prohibit landing is discarded at-sea. In addition to market and regulatory discard, smaller fish may sometimes be discarded, as fishermen seek to maximize the value of their landed catch allowances.

LE sablefish-endorsed permits provide the permit holder with an annual share of the sablefish catch. Sablefish-endorsed permits are assigned to Tier 1, 2 or 3. Each Tier 1 permit receives 1.4% of the sablefish allocation, with Tiers 2 and 3 receiving 0.64% and 0.36%, respectively. Each year, these shares are translated into amounts of catch (in pounds), or "tier limits", which may be caught during the primary fishery. In the 2007 season, these shares were translated into tier limits of 48,500 pounds for Tier 1, 22,000 pounds for Tier 2, and 12,500 pounds for Tier 3 (71 FR 78638). Of the 164 sablefish-endorsed permits in 2007, 28 were assigned to Tier 1, 42 to Tier 2, and 94 to Tier 3.

Regulations allow for up to three LE sablefish-endorsed permits to be 'stacked' on a single vessel. Permit stacking was implemented to increase the economic efficiency of the fleet and promote fleet capacity reduction. Stacking more than one sablefish-endorsed permit on a vessel allows the vessel to land sablefish up to the sum of the associated tier limits. For example, using 2007 tier limits, a vessel with a Tier 1 permit which bought or leased an additional Tier 2 and a Tier 3 permit could land a total of 83,000 pounds of sablefish during the primary fishery (Tier 1 + Tier 2 + Tier 3 = 48,500 + 22,000 + 12,500 lbs). However, permit stacking does not convey additive landing limits for any other species.

The primary LE sablefish fishery currently takes place over a seven-month season from April 1 to October 31. The seven-month season was first implemented in 2002. During 2001, the season was open from August 15 to October 31. For several years prior to 2001, tier limits were assigned, but they could only be fished during a 10-day window. Any primary season poundage left uncaught would then be divided into equal limits that were available to permitted vessels during a two-week "mop-up" fishery. Permit holders can now land their tier limits at anytime during the seven-month season. Once the primary season opens, all sablefish landed by a sablefish-endorsed permit is counted toward attainment of its tier limit. Vessels that have LE sablefish-endorsed permits can fish in the LE non-sablefish-endorsed fishery once their quota of primary season sablefish has been caught or when the primary season is closed, from November 1 through March 31. These vessels are only included in the WCGOP sampling frame for the LE sablefish-endorsed fishery. Once they switch to the LE non-sablefish-endorsed fishery, they are no longer covered.

West Coast Limited Entry Non-Sablefish-Endorsed Fixed Gear Fishery

The LE non-sablefish-endorsed fixed gear fishery operates primarily out of southern California ports, with the largest concentration (26 permits) operating out of the Los Angeles, California area. The fishery operates year-round but the majority of fishing activity occurs during the summer months when weather conditions improve.

Vessels in the LE non-sablefish-endorsed fishery range in size from 17 to 60 feet, with an average length of 34 feet. Vessels catch a variety of groundfish species, including thornyheads, sablefish, rockfish, and flatfish, primarily off the coast of California. The fleet typically fishes in depths greater than 80 fathoms. Nearly all of the vessels participating in this fishery deliver their iced catch to fresh fish markets. For example, vessels operating out of Newport Beach, California fish in the early morning hours and arrive back to port around 6:00 AM to sell their fish to local restaurants or markets. These vessels retain only the portion of their catch that is marketable and permitted to be landed. The portion of catch that is prohibited or not marketable is discarded at-sea.

Fishers may also discard certain size classes or certain species to maximize the value of their landed catch allowance.

LE non-sablefish-endorsed fixed gear permits are subject to daily and weekly trip limits for sablefish, thornyheads, and other species. In 2007, daily landing limits ranged from 300 to 350 pounds for sablefish, depending on the area. There also was a weekly option that provided the opportunity to make a single delivery once a week up to a limit, which ranged from 1,000 and 1,050 pounds depending on the area. Landings made under either of these options were also capped by a two-month cumulative limit of 5,000 pounds. The two-month cumulative limit for thornyheads was 10,000 pounds of longspine thornyhead and between 2,000 and 3,000 pounds of shortspine thornyhead.

West Coast Open Access Fixed Gear Fishery

As the open access sector of the fixed gear fishery does not require federal or state permits, characterizing the participants can be difficult. Vessels range in size from 10 to 97 feet, with an average length of 33 feet. Vessels catch a variety of groundfish species, including sablefish, spiny dogfish, and skates. Vessels operate out of all three states and generally fish in waters from 35 to 600 fathoms. These vessels retain only the portion of their catch that is marketable and allowed to be landed. The portion of catch that is prohibited or not marketable is discarded at-sea.

Open access fixed gear vessels are subject to daily and weekly trip limits for sablefish, spiny dogfish shark, and other species. In 2007, daily landing limits ranged from 300 to 350 pounds for sablefish depending on area. There was also a weekly option that provided the opportunity to make a single delivery once a week up to a limit that ranged from 700 and 1,050 pounds. Landings made under either of these options were also capped by a two-month cumulative limit that ranged from 2,100 to 3,000 pounds. Vessels operating north of 34° 27’ N. latitude were not allowed to land thornyheads, while vessels operating south of 34° 27’ N. latitude were allowed 500 pounds per day with no more than 1,000 pounds per two-month period. Limits for spiny dogfish shark ranged from 100,000 to 200,000 pounds per two-month period. Flatfish species, including dover sole, arrowtooth flounder, petrale sole, English sole, starry flounder, and all other flatfish were managed as a single group for the open access fishery, with a 3,000 pound monthly limit, of which no more than 300 pounds could be a species other than Pacific sanddab. Landing canary rockfish, yelloweye rockfish, and cowcod was prohibited in all areas.

Commercial Fixed Gear Fisheries Data

Fisheries managers and enforcement officers use state-issued sales receipts, referred to as fish tickets, to monitor fishery landings. This information is transferred to the Pacific Coast Fisheries Information Network (PacFIN) regional database system by state fishery agencies in Washington, Oregon, and California. Unlike the LE groundfish trawl fleet, vessel logbooks are not routinely collected for the limited entry and open access fixed gear fleets. Fish tickets only provide information on the amount of fish landed. In order to ensure that total catch does not exceed the annual Optimum Yield (OY), managers also need discard information for each managed species. One of the best means of acquiring accurate data needed to estimate the amount of discarded catch is through an at-sea observer program.

West Coast Groundfish Observer Program

On May 24, 2001, NOAA Fisheries (National Marine Fisheries Service, NMFS) established the WCGOP in accordance with the Pacific Coast Groundfish Fishery Management Plan (50 CFR Part 660) (66 FR 20609). This regulation requires all vessels that catch groundfish in the United States Exclusive Economic Zone (EEZ) from 3-200 miles offshore to carry an observer when notified to do so by NMFS or its designated agent. Subsequent state legislation has extended observer coverage to California and Oregon vessels that fish in the 0-3 mile state territorial zone. Observers are stationed along the US west coast from Bellingham, Washington to San Diego, California.

Program Goals

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

METHODS

Limited Entry Fixed Gear Fishery Permit Selection

LE fixed gear permits are selected for observation using stratified random sampling. First, the WCGOP determines the amount of time (based on available resources) it will take to observe the entire fleet; this is termed the selection cycle. The selection cycle varies due to changing priorities and observer resources. Because of data and timeline requirements for fisheries managers and historical observer program vessel coverage, the selection cycle does not coincide with the date range of the observer data analyzed in this report. The WCGOP has two selection lists for the limited entry fixed gear fishery: sablefish-endorsed and non-sablefish-endorsed. For the LE sablefish-endorsed fishery, the data in this report (Jan-Dec 2007) were collected during the selection cycle from January 1, 2007 through December 31, 2009 (selection cycle 3). For the non-sablefish-endorsed fishery, the data in this report (Jan 2007-Apr 2008) were collected during two selection cycles, January 1, 2007 through December 31, 2007 (selection cycle 3) and January 1, 2008 through December 31, 2008 (selection cycle 4).

The WCGOP aggregates ports along the US west coast into port groups, which are considered sampling strata. Vessels with LE fixed gear permits are assigned to a port group based upon the location of the previous year's landings. Within each port group, vessels are randomly selected for coverage. LE sablefish-endorsed permits are selected for all trips that land sablefish against their tiered sablefish quota during the primary season. LE non-sablefish-endorsed permits are selected for a two-month period. After the entire fleet has been selected, a new selection cycle begins. This selection process is designed to produce a logistically feasible sampling plan with a distribution of observations throughout the entire geographic range of the fishery over time. Based on this design and the current level of WCGOP funding, the program usually cycles through the LE sablefish-

endorsed fixed gear fleet every three years and the LE non-sablefish-endorsed fixed gear fleet every year.

For more information on the rationale behind vessel selection, see the observer coverage plan at: http://www.nwfsc.noaa.gov/research/divisions/fram/observer/observersamplingplan.pdf.

Complications in Selecting LE Sablefish-Endorsed Permits

LE sablefish tiered permits can be transferred to any other fixed gear vessel with a sablefish-endorsed permit at any time during the year. This flexibility, combined with the benefits from permit stacking, results in inter- and intra-year movement of permits between fixed gear vessels. As mentioned previously, LE fixed gear vessels participating in the sablefish-endorsed primary fishery can have up to three 'stacked' tier permits.

The movement of permits from vessel to vessel throughout the year complicates permit selection and requires continuous monitoring. Although permit transfers are tracked through the NOAA Fisheries Permits Office at the Northwest Region, the WCGOP has limited resources to monitor permit movement throughout the season. While permit owners are initially contacted before the season begins regarding their selection for coverage, their permits can still be transferred to different vessels, potentially introducing bias into the WCGOP sampling process. The observer program has therefore adopted a policy of observing the vessel on which the selected permit is eventually fished, even though that vessel may land its catch in a different port group.

Additional complications occur when tier permits are stacked. Prior to 2007, vessels with multiple permits were not required to associate their landings with a specific permit. Consequently, if a vessel had a mix of selected and unselected permits, all tier-limit trips had to be observed in order to ensure that the landings of selected permits had been covered. This led to the following two complications: 1) unselected permits received coverage and 2) permits were selected a second time before other permits were covered a first time.

As an example of the first complication, a vessel with a Tier 1 and a Tier 2 permit could land a total of 70,500 pounds of sablefish in 2007. If only the Tier 1 permit was selected for observer coverage, it would still be necessary to observe all primary season landings, up to 70,500 pounds, to ensure that all of the Tier 1 permit landings had been observed. This interferes with the assumption that the permit selection is a simple random sample of available permits due to the concurrent coverage of a permit that was not selected.

As an example of the second complication, suppose that the unselected Tier 2 permit in the example above was in fact observed, along with the Tier 1 permit during 2007. Following the primary sablefish season, the Tier 2 permit might remain on the same vessel or might be transferred to another vessel for the 2008 fishery. In either case, it might be selected for coverage in 2008, which would result in its landings having been observed in two consecutive years. In such circumstances where a permit has been previously covered, though not selected, the WCGOP has adopted the following policy:

- Observe the permit if it is attached to a vessel not previously observed for the primary fishery during the current selection cycle;
- Do not observe the permit if it is attached to a vessel that has been observed for the primary fishery during the current selection cycle.

In subsequent selection cycles, tracking of permit movement between vessels and permit landings will now be facilitated by additional regulations under Amendment 14 to the Pacific Coast Groundfish Fishery Management Plan (FMP). These included a regulation, effective January 1, 2007, which requires a permit owner who transfers a sablefish-endorsed permit mid-season to certify the cumulative amount of sablefish taken to date with that permit. An additional requirement in 2007 to write the federal groundfish limited entry sablefish-endorsed permit number on state fish ticket landing receipts will also facilitate tracking of specific permit landings. These additional regulations should resolve complications in LE sablefish-endorsed permit selection in the coming years.

Open Access Fixed Gear Fishery Vessel Selection

The open access fixed gear fleet is also selected for observation using stratified random sampling. First, the WCGOP determines the amount of time (based on available resources) it will take to observe the entire fleet; this is termed the selection cycle. The selection cycle varies due to changing priorities and observer resources. Although the open access fixed gear fishery in California has been observed by the WCGOP since 2004, coverage did not extend to Oregon and Washington until the beginning of 2007. For that year, open access fixed gear vessels from all three states were combined into a single sampling population and stratified random sampling was reinitiated under selection cycle 1. For the open access fixed gear fishery, the data in this report (Jan 2007-Apr 2008) were therefore collected in two selection cycles, January 1, 2007 through December 31, 2007 (selection cycle 1) and January 1, 2008 through December 31, 2008 (selection cycle 2).

Because the fishery is not permitted, a list of active open access fixed gear vessels was generated differently than were the permit lists for the limited entry fixed gear fleet. The open access fixed gear vessel list was based on fish ticket information from the PacFIN database. It included all fixed gear vessels with landings in Washington, Oregon, and California, that did not have federal limited entry groundfish permits and that met the following criteria:

- Vessel had combined landings in 2005 and 2006 of at least 5000 pounds of starry flounder, spiny dogfish shark, sablefish, or non-nearshore rockfish.
- Vessel landings did not include species allowed in state-permitted nearshore fisheries in California and Oregon.
- Vessel was greater than 17 feet in length.

These criteria resulted in a list of 170 open access fixed gear vessels that were eligible for selection by the observer program in 2007. Once the final vessel list was generated, vessels were assigned to port groups and sampled randomly in the same manner as described in the **“**Limited Entry Fixed Gear Fishery Permit Selection” section.

Coverage of Fixed Gear Fisheries

A list of fisheries in order of priority for observer coverage can be found in WCGOP observer training manual (NWFSC 2007). The LE fixed gear fisheries are the second highest priority for the WCGOP. The open access fixed gear fishery is the fifth highest priority for the WCGOP. Some trips on selected vessels in the open access fixed gear fishery may be missed when observers are unavailable due to coverage needs in one of the higher priority fisheries.

LE sablefish-endorsed vessels are selected for all trips during their primary sablefish season. Thus, all trips in which a selected vessel lands quota against a tiered sablefish permit are required to have observer coverage. For the LE non-sablefish-endorsed and the open access fixed gear fisheries, vessels are selected for a two-month period.

Some vessels whose permits are selected for a specific period may not be covered by an observer during that period or may not be covered on all trips during that period. A single trip may be waived from observer coverage due to observer availability, a safety issue that can be fixed in a relatively short period of time, or vessel space issues that arise when an extra person is aboard. A longer selection cycle waiver allows the vessel to fish without an observer during all trips taken during the entire selection cycle. Selection cycle waivers are given when a vessel has a serious safety concern that cannot be easily remedied or if the vessel is too small or space is too limiting to safely carry an observer.

Some vessels may receive a coverage period waiver. Coverage period waivers allow a vessel to fish all trips during a two-month period without an observer. Coverage period waivers are given for a variety of reasons, including vessel size/space constraints, observer availability, and vessel safety. Vessels are given a coverage period waiver for a specific two-month period or sablefish season. These vessels are added to the selection list for the next year (LE sablefish-endorsed) or two-month period (LE non-sablefish-endorsed). For instance, if a vessel is given a coverage period waiver for January 1 through February 28, that vessel is automatically selected for observer coverage for the period March 1 through April 30. Vessels continue to be added to subsequent selection lists until either an observer covers them or until the selection cycle ends, whichever comes first.

Fixed Gear Data Collection

Fisheries observers are trained professionals who monitor and record catch data on commercial fishing vessels by following protocols in the WCGOP Manual (NWFSC 2007).

Data collected by the observers on a trip basis include:

- Start time, end time, depth, and the location of set/retrieval of gear
- Gear type and fishing strategy
- Fish ticket identification number(s)

Data collected by the observers on a set basis include:

- Estimated total catch weight (including sets for which there is 100% discard)
- Weight of discard by catch category
- Reason for discard by catch category or species
- Species composition of discard by catch category
- Weight of fish retained by catch category
- Species composition of fish retained by catch category
- Catch of prohibited species and incidental take of protected species
- Size composition, tags, and viability assessments for Pacific halibut

- Size composition of discarded fish
- Basic taxonomic composition of non-fish bycatch
- Biological collections (length, sex, otoliths, etc.)

For more information regarding observer sampling on fixed gear vessels, refer to the WCGOP Observer Training Manual, Chapter 5.

Data Quality Control and Management

The WCGOP uses the following procedure to ensure that the quality of data collected is maintained:

1. Data are collected at-sea by the observer following protocols in the WCGOP Manual (NWFSC 2007).
2. Data are entered into the database system. The data are entered into a centralized Oracle database located at the Northwest Fisheries Science Center (NWFSC). Data within the Oracle database are accessible via a web-based GUI or by direct SQL queries to the database. The database table hierarchy is located in Appendix A.
3. Observers are debriefed by WCGOP staff after every two-month period. The debriefing includes:
    - Calculation, Data Form, and Sampling Methodology Checks - Observers send data to a debriefer on a monthly basis. The debriefer checks all calculations for accuracy, reviews data forms for completeness, and ensures appropriate sampling methodologies were employed.
    - Observer Logbook Review - Observers keep logbooks detailing the events of each trip, basic deck schematics, sampling methods used, communication logs, and confirmation of a current safety decal. Any sets during which sampling problems occurred are documented in the logbook and reviewed during debriefing.
    - Interview - The observer is interviewed by the debriefer. During the interview, sampling methodologies employed on all trips are discussed and data errors are updated.
    - Evaluation - Observers are evaluated on their performance based upon WCGOP generated criteria.
    - Data Entry Check - Electronic data are compared to the raw data for keypunch errors. Also, all corrections discovered during debriefing are updated in the database program.
4. Database Quality Control Queries - Quality control queries are run to detect data that fall outside specified ranges and identify other inconsistencies between data elements. These database quality control queries are run every six months to a year on all data collected during a specified time period.
5. Database Update - The raw data from all entries that are highlighted by the quality control queries are reviewed and the electronic data are updated.

Data Processing

Data processing includes the following steps: expanding the subsample of species composition to the set-level, translating observer species codes to the appropriate PacFIN fish ticket data codes, identifying and selecting the observer data records to match to fish tickets, querying and processing PacFIN fish ticket data associated with the fixed gear fisheries including the observed trips, and merging observer data and fish ticket data. The translation of WCGOP to PacFIN species codes allows a more seamless match of observer data with fish ticket data and provides consistent information for calculating observer coverage of overall fishery landings.

The WCGOP database administrator expands the subsamples of catch categories to the set level. In cases where the observer was only able to sample a portion of a particular set, a set-level expansion is needed. The following equation is used to calculate the weight of the retained and discarded catch of each species in a set:

$$X_s = \frac{x_s}{h} \times H$$

where:

X_s = the calculated weight of species s in the set,

x_s = observed weight of the species s in the subsample,

h = the number of hooks sampled in a set,

H = the total number of hooks in a set.

Once the set-level expansion is complete, a data file that includes all fields necessary for the analysis is produced.

Observer data that meet the following criteria are removed for the fish ticket matching process:

- Trips with sets where no retained or discarded information is recorded.
- All discarded catch information.
- Trips where no fish ticket could be found.
- Partial trips (trips where the vessel was observed for less than 100% of their landed catch).

Next, a translation step is applied to the WCGOP observer data that allows for the appropriate match to species codes on fish tickets in PacFIN.

Once these two steps are completed, the retained catch records from the observer data are merged with fish ticket data to provide more accurate estimates of retained catch. Fish tickets are trip-aggregated sales receipts for market species/categories. Fish ticket information is uploaded from state databases into the regional PacFIN database on a monthly basis and is subject to update frequently thereafter. The WCGOP data are linked to fish tickets by direct fish ticket number(s) obtained by the observer and/or by comparing the return date recorded by the observer with the dates of fish tickets from the vessel. For trips with multiple fish tickets, the fish ticket data are combined at the trip level for analysis purposes. For trips with missing fish tickets, the observer retained catch data are not adjusted.

The WCGOP data are adjusted so that the total trip pounds of retained fish in a catch category 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. To match the total trip pounds, the weights within each observer retained catch category are scaled up or down by the ratio of fish ticket to observer trip weights for that category. The following equation is used to calculate the adjustment factor:

$$A_{mtk} = x_{mtk} / \sum_{k} x_{mtk}$$

where:

x_{mtk} = lbs in catch category k in set t in trip m

A_{mtk} = adjustment factor used for catch category k in set t in trip m.

The adjustment factor for each set is then applied to the total fish ticket weight at the trip level. This produces an adjusted weight for each set within that trip. The equation used for this adjustment is as follows:

$$x_{mtk} = A_{mtk} \times C_{mk}$$

where:

C_{mk} = lbs in catch category k for trip m recorded on the fish ticket.

When a catch category in the WCGOP data cannot be matched to a fish ticket catch category, the WCGOP data are not adjusted. Catch categories found only on the fish tickets are distributed across the observed sets using the proportion of the observed catch per set divided by the total observed catch per trip using the following equation:

$$B_{mk} = \sum_{k}\sum_{s} x_{mtks} / \sum_{t}\sum_{k}\sum_{s} x_{mtks}$$

$$C_{mtk} = B_{mt} \times C_{mk}$$

where:

B_{mt} = the proportion of observed catch in set t in trip m,

C_{mtk} = lbs in catch category k for set t in trip m recorded on the fish ticket.

Upon completion of the observer data merge and adjustment with fish ticket data, the data that had been previously removed for the matching process are then incorporated back into the data file for analysis.

Analysis

Observed coverage rates in the limited entry and open access fixed gear fisheries were calculated as the proportion of fleet-wide sablefish landings observed. Overall, sablefish is the largest component of the catch in each of the fixed gear fisheries included in this report. The LE non-sablefish-endorsed fishery also includes a large component of shortspine thornyhead catch, particularly in the area south of 36° N. latitude. Although different denominators are used north and south of 36° N. latitude when observer data are expanded to estimate discard at the fixed gear fleet-wide level (Hastie and Bellman 2007), observer coverage rates in this report were calculated using the

same denominator (sablefish landings) to provide consistency across all sectors of the fixed gear fisheries. Coverage rates were computed based on the complete dataset for 2007 and January through April of 2008.

After coverage rates were calculated but prior to subsequent analyses, data that met the following criteria were removed:

- Data where WCGOP data quality standards were not met.
- Sets where no retained or discarded information was recorded.
- Sets where the species composition of discarded catch was not known (unsampled discard).

The ratio estimator technique (Cochran 1977) was used to estimate bycatch and discard rates for each major species or species group. Rates were calculated for all of the stocks currently managed under rebuilding plans, prohibited species in each fishery (Pacific halibut), and all stocks for which discard is estimated annually on a fleet-wide basis. The ratio estimates (R_i) were calculated by area (i):

$$R_i = \sum_t y_{it} / \sum_t x_{it}$$

where:

y_{it} = the discarded or total catch pounds of a species i in the set t.

x_{it} = the retained pounds of sablefish or groundfish species (see description below) in the set t.

The variance of R_i is approximated by using the following equation:

$$Var(R_i) = \left(\frac{\bar{y}_i}{\bar{x}_i}\right)^2 \left[\frac{s^2(y_{it})}{\bar{y}_i^2} + \frac{s^2(x_{it})}{\bar{x}_i^2} - \left(\frac{s^2(y_{it})}{\bar{y}_i^2} \cdot \frac{s^2(x_{it})}{\bar{x}_i^2}\right)\right]$$

where:

$\bar{x}_i$ and $\bar{y}_i$ = the means of x_{it} and y_{it} over the sets.

$s^2(x_{it})$ and $s^2(y_{it})$ = the standard errors of x_{it} and y_{it} over all sets.

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_i) cannot be calculated when $x_{it} = 0$ or $y_{it} = 0$ for all sets and should be considered with extreme caution when R_i is equal to one. In order to best support fishery management, variance was calculated separately for data in each geographic area. Variance estimates, therefore, do not relate back directly to the random stratified sampling framework employed by WCGOP, where vessels within each port group were the sampling unit.

Discard ratios were computed separately for each fixed gear fishery as the observed discard weight of a particular species over the observed weight of retained sablefish. Because the rates provided in this report are used directly in the estimation of fleet-wide discard, calculations performed on data south of 36° N. latitude were modified to be consistent with methodology in the total mortality analysis (Hastie and Bellman 2007). For these data, discard ratios were instead

computed as the observed discard weight of each species over the observed weight of all retained groundfish species listed in the Pacific Coast Groundfish FMP, except Pacific hake.

Similarly, bycatch ratios were calculated as the observed total catch weight (discarded + retained) divided by the observed weight of retained sablefish for all data north of 36° N. latitude. South of 36° N. latitude, bycatch ratios were calculated using retained FMP groundfish (except Pacific hake) in the denominator rather than sablefish alone. Pacific hake was excluded when using a retained groundfish denominator because vessels that target or land large amounts of this species are considered to be part of the hake fishery, which is distinct from other groundfish fisheries.

In all cases where a FMP groundfish species grouping was used to compute discard and bycatch 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 done to prevent double counting associated with differences in the species codes used by observers and processors. For instance, while observers 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 species likely coincide with species grouping codes on fish tickets. Instead, by using only the retained groundfish weight from fish tickets in discard and bycatch 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 weights in observer and fish ticket data that share the same species code will match and adjust properly.

RESULTS AND DISCUSSION

Overall Coverage Levels

The total number of trips, sets, vessels, and observed and total fleet-wide sablefish landings in the LE sablefish-endorsed, LE non-sablefish-endorsed, and open access fixed gear fisheries are summarized in Tables 1a through 1c. The observed coverage rate, calculated as the proportion of fleet-wide sablefish landings observed, is provided with summaries for each WCGOP port group, two geographic areas north and south of the groundfish management line at 40°10' N. latitude, and for the entire US west coast.

Observer coverage in the LE sablefish-endorsed fishery in 2007 relative to 2006 decreased slightly on a coastwide basis from 26% to 25% (NMFS 2007a). Overall, coverage was lower in the area north of 40°10' N. latitude (24%) than in the area south of this line (37%). However, when split out by port group, Bellingham and Neah Bay in the north had the highest coverage rates at 32% and 36%.

Observer coverage in the LE non-sablefish-endorsed fishery in 2007 increased relative to 2006 from 7% to 13% on a coastwide basis (NMFS 2007b). It should be noted, however, that the coverage rates reported previously for this fishery were calculated based on groundfish landings rather than sablefish landings as it is currently. Table 1b provides coverage rates for both the 2007 calendar year and January through April of 2008. In the calendar year of 2007, coverage was highest in the Los Angeles port group, where 17% of sablefish landings were observed. Coverage rates in the beginning of 2008 were highest among port groups in northern California.

Observer coverage in the open access fixed gear fishery in 2007 was 4% coastwide, as this is a lower priority fishery for the observer program. These data have not been reported previously by the WCGOP, although they are used in conjunction with LE fixed gear data in subsequent analyses to determine fleet-wide discard (Hastie and Bellman 2007).

In 2007, coverage rates for this fishery were highest for Neah Bay and Crescent City, but range for all port groups from 2% to 7%.

Spatial Distribution of Observations

The distribution of observed trips and sets among port groups provides perspective on where observer coverage and, secondarily, fishing effort was focused along the US west coast in each fixed gear sector. Overall, the majority of observed trips in the LE sablefish-endorsed fishery were from northern California and southern Oregon port groups. Observers covered 25 trips from Crescent City and 21 trips from Newport/Coos Bay, compared with 12 in Bellingham, and 16 in Neah Bay. The majority of observed trips in the LE non-sablefish-endorsed fishery were focused along the southern California coast, with the largest number of trips (119) from Los Angeles. Observer coverage was focused at multiple points along the coast in the open access fixed gear fishery, with 22 trips from Crescent City, 21 from Eureka, 18 from Astoria, and 17 from southern California port groups.

In 2007, spatial closures were employed in the LE fixed gear fisheries by federal groundfish management. Rockfish Conservation Area (RCA) closures were set for the entire year from the shoreline to 100 fathoms (fm) in the area north of 46°16' N. latitude, from 30 to 100 fm in the area between 46°16' and 40°10' N. latitude, from 30 to 150 fm in the area between 40°10' to 34°27' N. latitude, and from 60 to 150 fm in the area south of 34°27' N. latitude.

It is important to note that the WCGOP controls only the selection of permits for coverage. Fishing activity of selected vessels can vary in unpredictable ways. Therefore, the program cannot control the percentage of landings or the number of trips that are actually observed. As a result, coverage levels within each gear type, particularly within a port group, may vary from year.

West Coast Limited Entry Sablefish-Endorsed Fixed Gear Fishery

Table 2 presents the observed total catch weight (mt), discard weight (mt) and percent discarded by gear type and management area for the 2007 LE sablefish-endorsed fishery. Observed coastwide total catch (discarded + retained) in this fishery was largely comprised of sablefish, followed by spiny dogfish, Pacific halibut, arrowtooth flounder, and longnose skate. Of the rebuilding species, darkblotched rockfish and yelloweye rockfish were caught in the largest amounts using longline gear north of 40°10' N. latitude. Canary rockfish, Pacific ocean perch, bocaccio, and widow rockfish were also caught in this area with longline gear. Yelloweye and canary rockfish were not allowed to be retained or landed as a result of management measures for rebuilding species, however, small amounts of retained weight were recorded for Pacific ocean perch, widow rockfish and darkblotched rockfish. Coastwide, the only rebuilding species caught using pot gear were darkblotched rockfish and Pacific ocean perch. Small amounts of protected species were also observed in the LE sablefish-endorsed fishery. These included chinook, chum and coho salmon

For non-rebuilding species, the decision to discard is dependent not only upon levels of cumulative retained catch and corresponding landing limits, but also upon the size, condition, and marketability of the catch. Overall, spiny dogfish constituted the largest component of observed

discard coastwide. Relatively large amounts of sablefish, arrowtooth flounder and longnose skate were also discarded. More than 38 metric tons of Pacific halibut were discarded north of 40°10' N. latitude from longline gear. An additional 0.8 metric tons of Pacific halibut was caught in pots coastwide. Although the variety and quantity of bycatch species caught using pot gear was less than that of longline, larger amounts of discarded sablefish, lingcod and Dungeness crab were associated with pot gear.

Table 3 presents discard ratios and standard errors for the 2007 LE sablefish-endorsed fishery by gear type and management area. Species are grouped for ratio calculations according to Appendix C. All discard ratios in this fishery were computed using retained sablefish in the denominator, as all trips fished north of 36° N. latitude and primarily targeted sablefish. Relative to 2006, discard ratios associated with longline gear decreased for a number of different species and species groups, including lingcod, longnose skate and sablefish in the north. The most dramatic decrease in discard rates occurred north of 40°10' N. latitude for Pacific halibut, where the average weight discarded per 100 lbs of retained sablefish declined from 45.9 lbs in 2006 to 13.8 lbs in 2007.

Discard ratios associated with longline gear also increased for some species, particularly spiny dogfish, other slope rockfish and sablefish in the south. In 2006, only one longline trip was observed in the LE sablefish-endorsed fishery south of 40°10' N. latitude and discard ratios associated with longline gear were therefore not reported in this area for confidentiality reasons. A larger sample size was available in 2007 for the south, and discard ratios generated from these data are relatively consistent with those in the north. In addition, discard ratios associated with pot gear are now reported on a coastwide basis, rather than for the northern area only. These values remain relatively consistent with the previous year's estimates, although the sablefish discard ratio has increased notably since 2006 from 0.161 lbs to 0.352.

Table 4 provides bycatch ratios for the 2007 LE sablefish-endorsed fishery. Again, bycatch ratios in 2007 increased most dramatically for spiny dogfish and other slope rockfish, and decreased most dramatically for Pacific halibut relative to rates from 2006. This was particularly the case north of 40°10' N. latitude. Bycatch ratios for rebuilding species exhibited very little change in relation to ratios from 2006. The only exception was for darkblotched rockfish, for which the longline bycatch ratio in the north decreased from 0.0026 in 2006 to 0.0013 in 2007. This trend is confirmed in Figure 1, which presents bycatch ratios over time for all rebuilding species caught in the LE sablefish-endorsed fishery.

West Coast Limited Entry Non-Sablefish-Endorsed Fixed Gear Fishery

Table 5a presents the observed total catch weight (mt), discard weight (mt) and percent discarded by gear type and north and south of 36° N. latitude for the 2007 LE non-sablefish-endorsed fishery. The subsequent table (Table 5b) provides the same information for January through April of 2008. Observed coastwide total catch (discarded + retained) in the LE non-sablefish-endorsed fishery is largely comprised of sablefish, followed by shortspine thornyhead, unspecified shark, longnose skate, unspecified grenadiers and longspine thornyhead. Of the rebuilding species, only bocaccio, darkblotched rockfish, and cowcod were caught coastwide in this fishery. Cowcod were not allowed to be retained and landed, as a result of management measures for rebuilding species.

For non-rebuilding species, the decision to discard is dependent not only upon levels of cumulative retained catch and corresponding landing limits, but also upon the size, condition, and marketability of the catch. Overall, sablefish constituted the largest component of observed discard coastwide. Relatively large amounts of unspecified shark, longnose skate, shortspine thornyhead,

and spiny dogfish were also discarded. The observed amounts of blackgill rockfish, longnose skate, and some shelf rockfish caught and discarded south of 36° N. latitude were lower in relation to 2006 values.

Table 6 presents discard ratios and standard errors for the 2007 LE non-sablefish-endorsed fishery by gear type and the areas north and south of 36° N. latitude. Species are grouped for ratio calculations according to Appendix C. Discard ratios have not previously been reported for this fishery, but are provided here in a manner consistent with subsequent estimation methods to calculate fleet-wide discard. As such, they are computed using retained sablefish as the denominator in the north and retained FMP groundfish species (excluding Pacific hake) as the denominator south of 36° N. latitude. Discard ratios are close to zero for most rebuilding species in the LE non-sablefish-endorsed fishery. The highest rate observed among rebuilding species was for bocaccio north of 36° N. latitude, where an average of 3 lbs was discarded per 100 lbs of retained sablefish.

Table 7 provides bycatch ratios for the 2007 LE non-sablefish-endorsed fishery. Bycatch ratios in the northern area were again computed using retained sablefish in the denominator, and the highest ratio observed in this area other than that for sablefish (which is inevitably greater than 1) was for unspecified grenadiers. Grenadier catch was larger relative to that in 2006 both north and south of 36° N. latitude, and a considerable proportion of this catch was retained in the northern area. The values presented for shortspine thornyhead, sablefish and other nongroundfish are also relatively high in the southern area. For rebuilding species, bycatch ratios changed in 2007 relative to previous years. Bycatch of bocaccio increased slightly north of 36° N. latitude, but decreased on a coastwide basis. Coastwide bycatch ratios for darkblotched rockfish increased, due largely to higher catch and retention of this species south of 36° N. latitude. These trends are confirmed in Figure 2, which presents bycatch ratios over time for all rebuilding species caught in the LE non-sablefish-endorsed fishery.

West Coast Open Access Fixed Gear Fishery

Table 8a presents the observed total catch weight (mt), discard weight (mt) and percent discarded for hook-and-line gear north and south of 40°10' N. latitude in the 2007 open access fixed gear fishery. The subsequent table (Table 8b) provides the same information for pot gear, with one additional area reported south of 36° N. latitude. Table 8c provides the same information for both gears coastwide for January through April 2008. Observed coastwide total catch (discarded + retained) in this fishery was largely comprised of sablefish, followed by spiny dogfish, Pacific halibut, longnose skate, and arrowtooth flounder. Of the rebuilding species, only darkblotched rockfish, Pacific ocean perch and widow rockfish were caught coastwide in the open access fixed gear fishery.

For non-rebuilding species, the decision to discard is dependent not only upon levels of cumulative retained catch and corresponding landing limits, but also upon the size, condition, and marketability of the catch. Overall, sablefish constituted the largest component of observed discard coastwide. Relatively large amounts of spiny dogfish, Pacific halibut, and longnose skate were also discarded.

Table 9 presents discard ratios and standard errors for the 2007 open access fixed gear fishery by gear type in three separate areas: north of 40°10' N. latitude, between 40°10' and 36° N. latitude, and south of 36° N. latitude. Species are grouped for ratio calculations according to Appendix C. Discard ratios have not previously been reported for this fishery, but are provided here in a manner consistent with subsequent estimation methods to calculate fleet-wide discard. As such, they

are computed using retained sablefish as the denominator north of 36° N. latitude and retained FMP groundfish species (excluding Pacific hake) as the denominator south of this line. Discard ratios for rebuilding species were highest among hook-and-line vessels in the area north of 40°10' N. latitude. When compared with other observed fixed gear fisheries, the open access hook-and-line sector had the highest discard ratio for darkblotched rockfish, Pacific ocean perch and widow rockfish in this area and on a coastwide basis. This trend is also evident in bycatch ratios presented in Table 10. There were fewer bycatch species and smaller bycatch ratios associated with pot gear when compared with hook-and-line, although the pot gear bycatch rate for darkblotched rockfish between 40°10' N. latitude and 36° N. latitude was larger than that of hook and line gear.

Biological Data Collection and Summary

WCGOP observers collect four types of biological data from non-protected resources. These include lengths, sexes, otoliths for aging, and viabilities (Pacific halibut only). Biological data are collected from randomly selected individuals within a species composition sample and only from the discarded portion of the total catch. Biological data collected in the limited entry and open access fixed gear fisheries for non-protected resources from September of 2003 through April of 2008 are summarized in Table 11. Although the open access fixed gear sector was only observed in California prior to 2007, all biological data available for this sector are presented jointly.

The length frequency distributions of discarded sablefish from biological data are reported for the LE sablefish-endorsed, LE non-sablefish-endorsed, and open access fixed gear fisheries in Figure 3. Distributions are presented separately for longline and pot/trap gear. The central tendency of discarded sablefish lengths remained relatively consistent between gear types, however, fish between 10 and 30 cm in length were only observed in association with pot gears.

Figure 4 presents length frequency distributions for rebuilding species observed in the LE sablefish-endorsed, LE non-sablefish-endorsed, and open access fixed gear fisheries from September 2003 through April 2008. Length frequencies for other non-rebuilding species are also presented in Figure 5. Distributions are only provided for species for which there were more than 30 observations.

For protected resources, including any species regulated under the Endangered Species Act (ESA), additional types of biological data are collected whenever possible. It is the policy of the WCGOP to collect lengths, photographs and tissue samples from all green sturgeon observed, as well as sexes and fin ray samples from all dead individuals. For salmon, observers record length and sex for all individuals, as well as record weight, note presence or absence of an adipose fin, and collect scales and snouts for a subsample. Information regarding biosampling procedures for marine mammals and seabirds is available in the WCGOP observer training manual (NWFSC 2007).

Table 12 summarizes the biological data for protected fish resources collected by observers in the limited entry and open access fixed gear fisheries from September of 2003 through April of 2008. Only two specimens were observed: two coho salmon in 2005 and 2007. These specimens were caught in association with longline gear in the LE sablefish-endorsed fishery.

Summary

The bycatch and discard rates calculated from observer data collected aboard fixed gear vessels from January 2007 through April 2008 are now available for use in the management process. The

observer data will be used in conjunction with additional commercial fixed gear fishery data to inform current fishery management in projection modeling of bycatch. In addition, these discard rates will be used to estimate discard at the fleet-wide level to account for annual coastwide mortality in these fisheries. The collected biological data will also be available for use by stock assessment authors.

REFERENCES

Cochran, W.G. 1977. Sampling Techniques. John Wiley & Sons, New York. P. 155.

Hastie, J. and M. Bellman. 2007. Estimated 2006 Discard and Total Catch of Selected Groundfish Species. NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/documents/totalmortality2006_final.pdf.

National Marine Fisheries Service (NMFS). 2007a. West Coast Groundfish Observer Program Data Report and Summary Analyses of Sablefish-Endorsed Fixed Gear Permits. NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/obs_le_sablefish_rpt_sep07.pdf.

National Marine Fisheries Service (NMFS). 2007b. West Coast Groundfish Observer Program Data Report and Summary Analyses of Non-Sablefish-Endorsed Fixed Gear Permits. NOAA, Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/obs_le_0_tier_rpt_sept07.pdf.

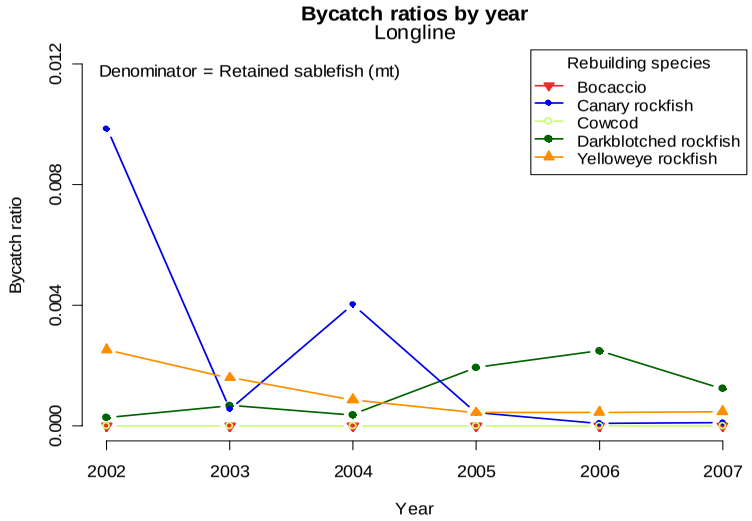
Northwest Fisheries Science Center (NWFSC). 2007. West coast groundfish observer training manual. NOAA, West Coast Groundfish Observer Program. Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc. noaa.gov/research/divisions/fram/observer/observermanual/observermanual.cfm.

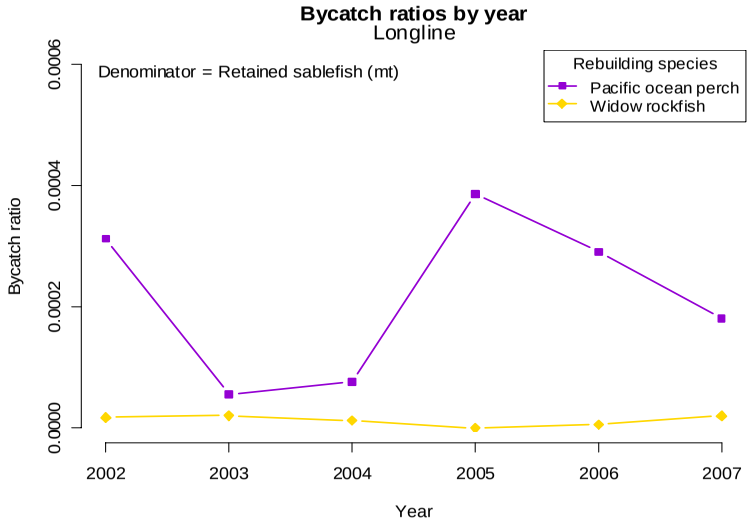
Northwest Fisheries Science Center (NWFSC). 2008. Report on the Bycatch of Marine Mammals and Seabirds by the US West Coast Groundfish Fleet. Northwest Fisheries Science Center, 2725 Montlake Blvd E, Seattle, WA. Available at http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/otherreports/full_mmsb_report072308.pdf

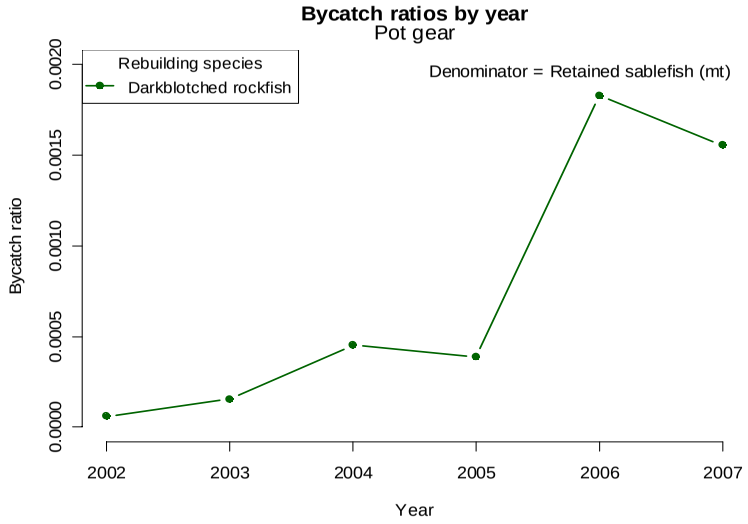
Pacific Fishery Management Council (PFMC). 2008. Pacific Coast Groundfish Fishery Management Plan: For the California, Oregon, and Washington Groundfish Fishery, As Amended Through Amendment 19. Pacific Fishery Management Council, 7700 NE Ambassador Place Suite 101, Portland, OR. Available at: http://www.pcouncil.org/groundfish/gffmp/fmpthru19.pdf.

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. N. Am. J. Fish. Mgmt. 18:569-586.

Figure 1: Bycatch ratios over time for rebuilding species observed in the limited entry sablefish endorsed (primary) fishery. The graph on the top shows bycatch ratios associated with longline gear while the graph on the bottom is for pot gear. Bycatch ratios were computed as the observed total catch of a rebuilding species divided by the weight of retained sablefish.







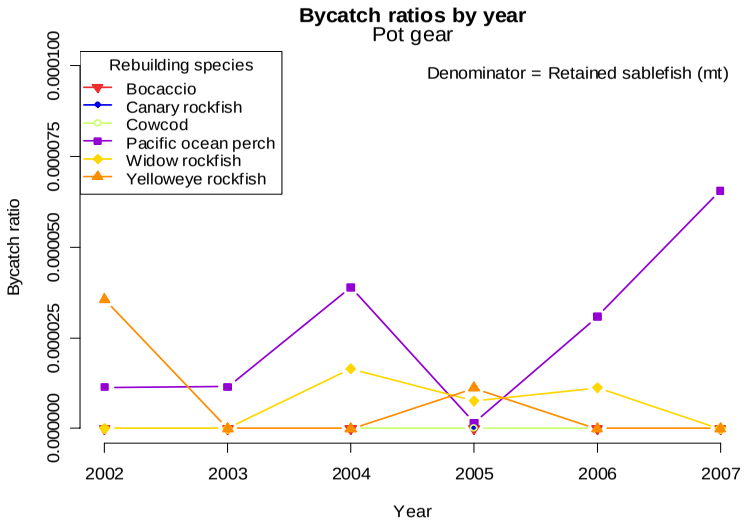


Figure 2: Bycatch ratios over time for the limited entry non-sablefish-endorsed fishery. Bycatch ratios were computed as the observed total catch of a rebuilding species divided by the weight of retained sablefish.

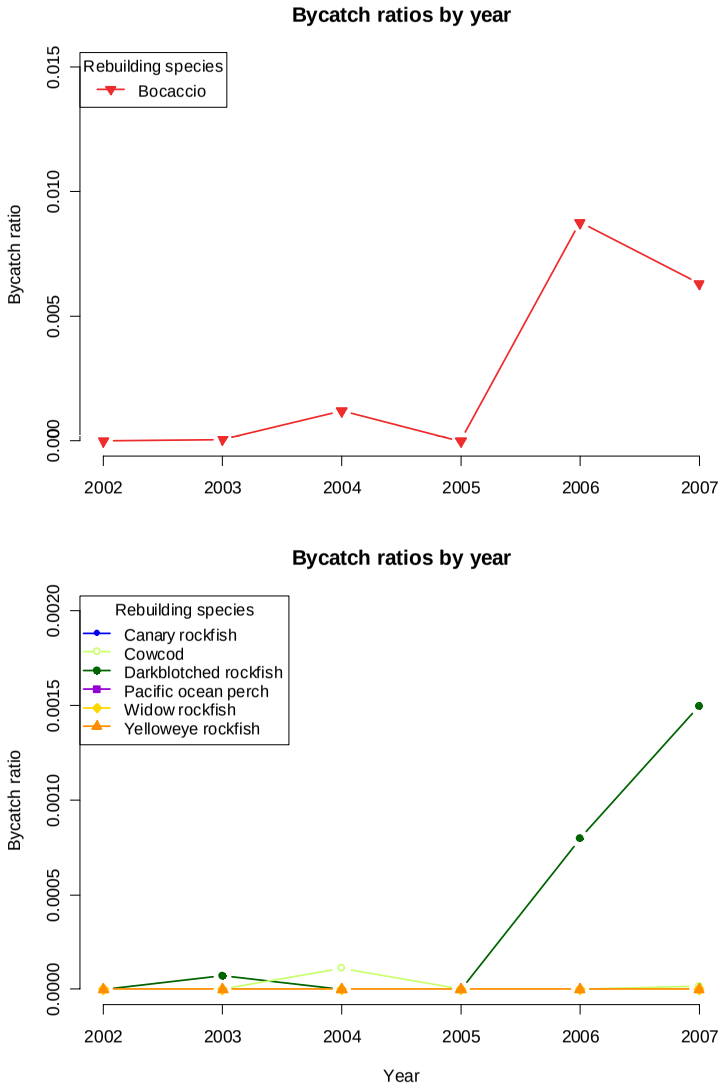


Figure 3: Length frequency distribution of sablefish discard in the limited entry sablefish-endorsed (left), limited entry non-sablefish-endorsed (middle), and open access fixed gear (right) fisheries from all years observed. Length frequencies are presented separately for longline (top) and pot gear (bottom) when applicable.

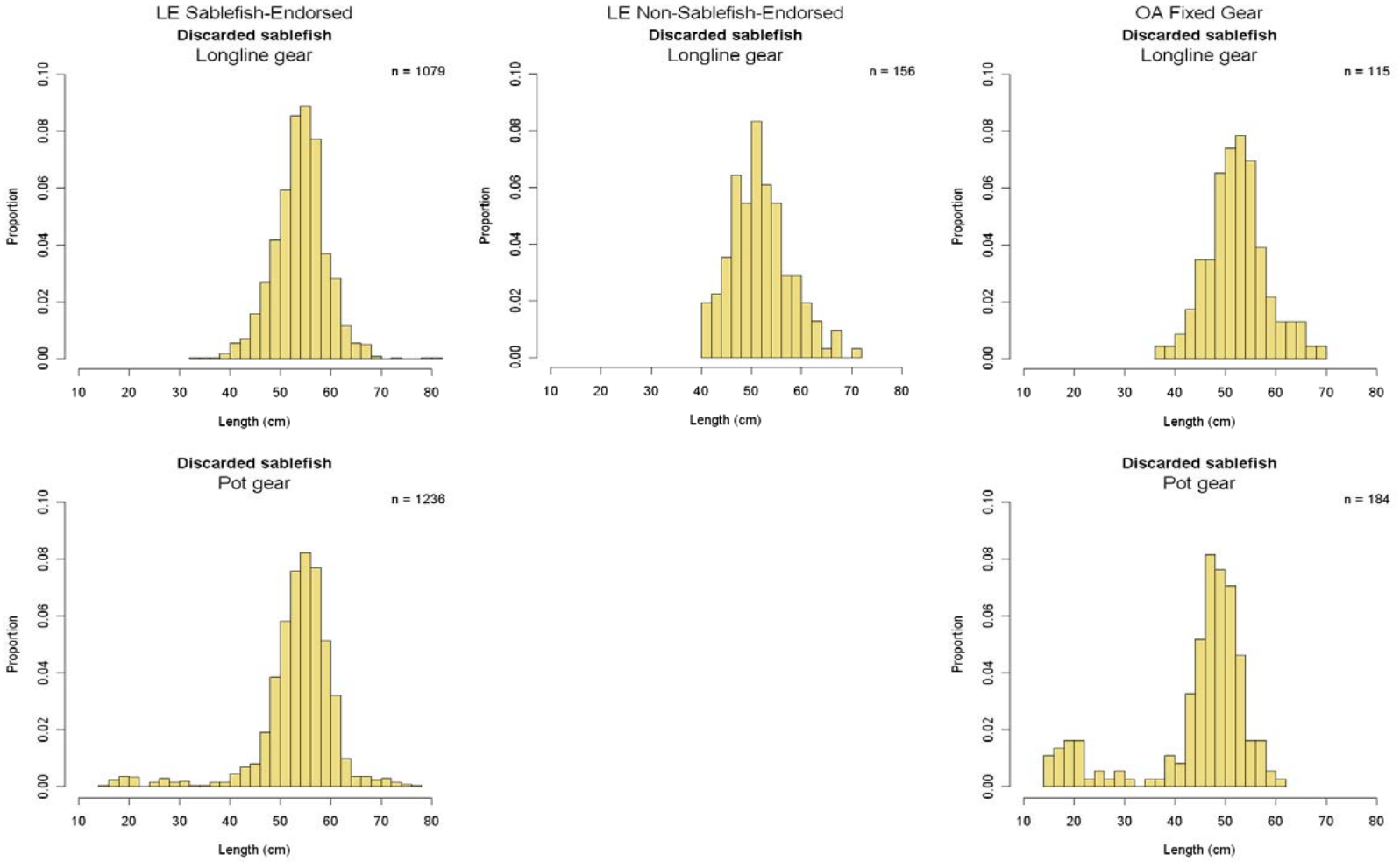


Figure 4: Length frequency distribution of discarded rebuilding species from all years observed in the limited entry sablefish-endorsed, limited entry non-sablefish-endorsed, and open access fixed gear fisheries. Biological data are combined across across all gear types to generate length frequencies for rebuilding species. Length frequencies are only provided for rebuilding species with more than 30 observations across all years observed.

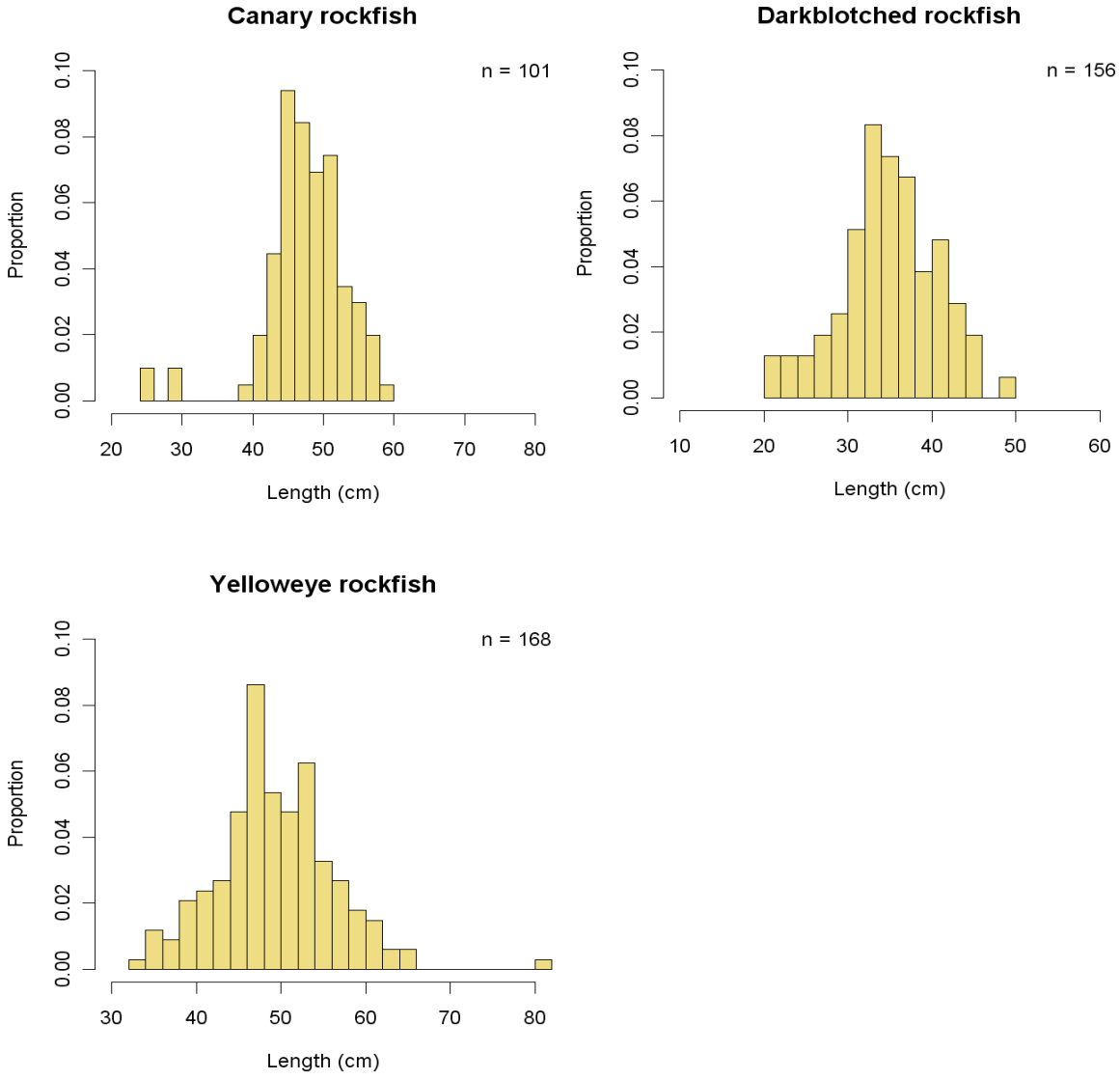


Figure 5: Length frequency distribution of discarded (non-rebuilding) species from all years observed in the limited entry sablefish-endorsed, limited entry non-sablefish-endorsed, and open access fixed gear fisheries. Biological data are combined across across all gear types to generate length frequencies for each species. Length frequencies are only provided for species with more than 30 observations across all years observed.

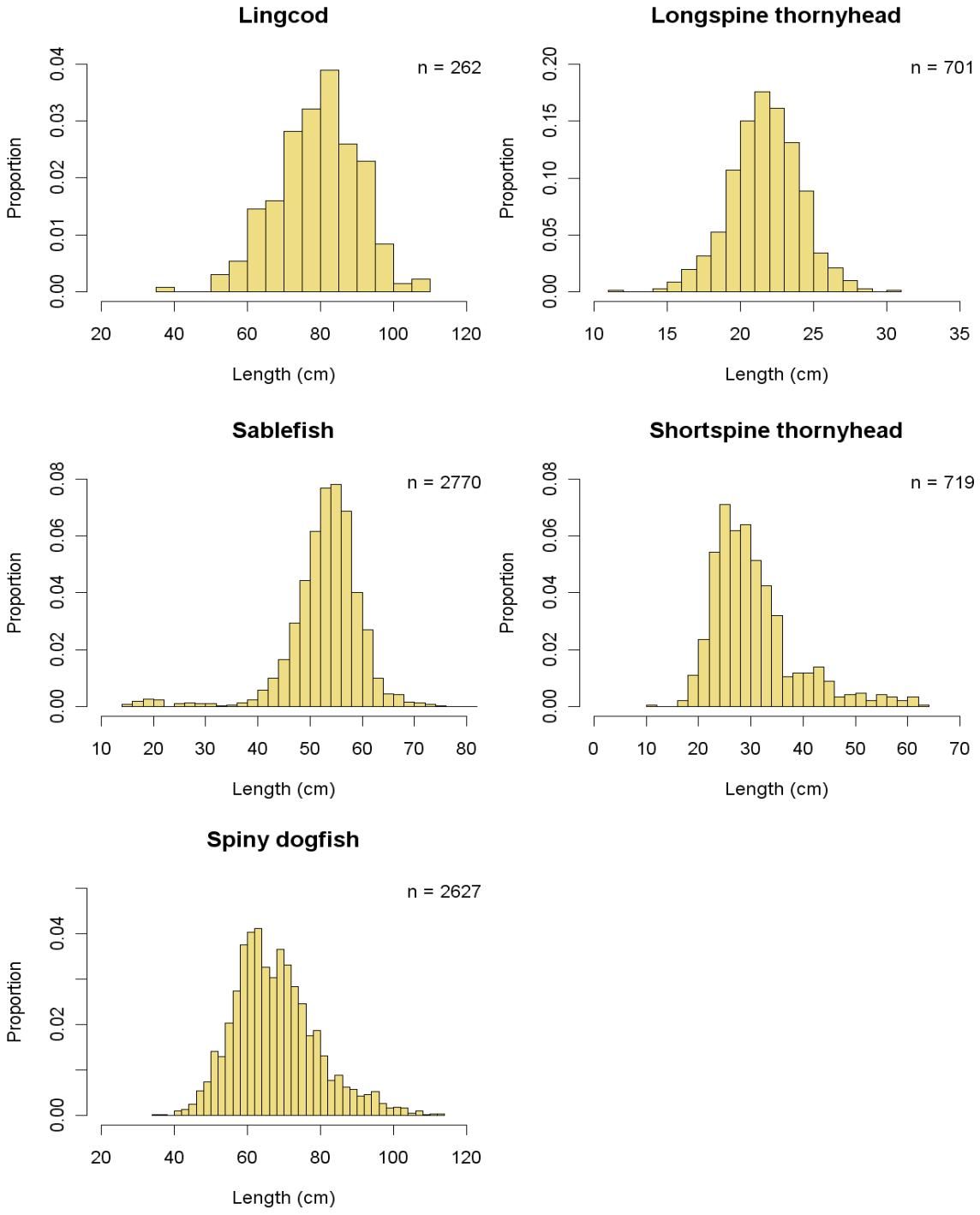


Table 1a: Total trips, sets, vessels and sablefish landings observed in the 2007 limited entry sablefish-endorsed fishery. Coverage rates (far-right column) for each port group, gear type, and management area are computed as the proportion of total sablefish landings that were observed. Data are combined as needed to ensure confidentiality.

		Limited Entry Sablefish-Endorsed (Primary) Fishery					
	Port Group	Number of observed trips	Number of observed sets	Number of observed vessels	Observed sablefish landings (mt)	Total fleet sablefish landings (mt)	% of total sablefish landings observed
2007	Bellingham	12	238	5	100.5	311.6	32.2%
	Neah Bay	16	109	4	46.4	129.2	35.9%
	Astoria	18	124	5	78.0	281.2	27.7%
	Newport Coos Bay	21	121	5	91.2	485.1	18.8%
	Crescent City	25	29	4	17.1	133.9	12.8%
	Eureka Fort Bragg San Francisco Monterey	16	63	5	54.8	207.4	26.4%
	Morro Bay	--	--	--	--	--	--
	Santa Barbara	--	--	--	--	--	--
	Los Angeles	--	--	--	--	--	--
	Longline gear	76	525	22	298.0	1122.5	26.6%
	Pot gear	31	158	4	90.0	425.9	21.1%
	North of 40°10' N	93	625	22	338.9	1415.3	23.9%
	South of 40°10' N	14	58	4	49.1	133.0	36.9%
	Coastwide total	108	684	28	388.0	1548.4	25.1%

Note: The number of trips and vessels north and south of 40°10' N. latitude do not sum to coastwide totals because some vessels fish in both areas on the same trip. Also, any sets that are lacking spatial information are included in coastwide and port group totals only.

Table 1b: Total trips, sets, vessels and sablefish landings observed in the 2007 and January through April of 2008 limited entry non-sablefish-endorsed fishery. Coverage rates (far-right column) for each port group and management area are computed as the proportion of total sablefish landings that were observed. Data are combined as needed to ensure confidentiality.

		Limited Entry Non-Sablefish-Endorsed Fishery					
	Port Group	Number of observed trips	Number of observed sets	Number of observed vessels	Observed sablefish landings (mt)	Total fleet sablefish landings (mt)	% of total sablefish landings observed
2007	Bellingham	--	--	--	--	--	--
	Neah Bay	--	--	--	--	--	--
	Astoria Newport Coos Bay	--	--	--	--	7.8	0%
	Crescent City Eureka Fort Bragg San Francisco Monterey	19	28	8	6.6	56.2	12%
	Morro Bay Santa Barbara	21	48	6	0.9	13.1	7%
	Los Angeles	119	230	22	9.0	53.6	17%
	North of 36° N	20	29	9	6.6	64.0	10%
	South of 36° N	139	277	28	9.9	66.7	15%
	Coastwide total	159	306	36	16.5	130.7	13%
Jan - Apr 2008	Bellingham	--	--	--	--	--	--
	Neah Bay	--	--	--	--	--	--
	Astoria Newport Coos Bay	--	--	--	--	2.3	0%
	Crescent City Eureka Fort Bragg San Francisco Monterey	*	*	*	*	13.2	*
	Morro Bay	--	--	--	--	6.2	0%
	Santa Barbara	9	12	3	0.0	1.1	2%
	Los Angeles	23	42	7	0.1	11.8	1%
	North of 36° N	*	*	*	*	15.5	*
	South of 36° N	31	53	10	0.1	19.1	0%
	Coastwide total	*	*	*	*	*	*

* Not reported due to confidentiality.

Note: The number of trips and vessels north and south of 40°10' N. latitude do not sum to coastwide totals because some vessels fish in both areas on the same trip. Also, any sets that are lacking spatial information are included in coastwide and port group totals only.

Table 1c: Total trips, sets, vessels and sablefish landings observed in the 2007 and January through April of 2008 west coast open access fixed gear fishery. Coverage rates (far-right column) for each port group, gear type, and management area are computed as the proportion of total sablefish landings that were observed. Data are combined as needed to ensure confidentiality.

		West Coast Open Access Fixed Gear Fishery					
	Port Group	Number of observed trips	Number of observed sets	Number of observed vessels	Observed sablefish landings (mt)	Total fleet sablefish landings (mt)	% of total sablefish landings observed
2007	Bellingham	--	--	--	--	1.3	0%
	Neah Bay	--	--	--	--	24.5	0%
	Astoria	18	53	9	3.5	50.1	7%
	Newport Coos Bay	10	19	5	1.9	51.1	4%
	Crescent City	22	23	11	4.2	59.5	7%
	Eureka Fort Bragg	21	21	13	5.5	121.6	4%
	San Francisco	--	--	--	--	7.3	0%
	Monterey	9	9	3	0.9	38.8	2%
	Morro Bay Santa Barbara Los Angeles	17	17	4	2.5	112.9	2%
	Hook-and-line gear	51	67	25	9.8	222.7	4%
	Pot gear	46	75	21	8.7	244.4	4%
	North of 40°10' N	54	99	28	10.5	217.8	5%
	40°10' N to 36° N	26	26	13	5.4	136.4	4%
	South of 36° N	17	17	4	2.5	112.9	2%
	Coastwide total	97	142	45	18.5	467.0	4%
Jan - Apr 2008	Bellingham	--	--	--	--	--	--
	Neah Bay	*	*	*	*	0.7	*
	Astoria	--	--	--	--	2.4	0%
	Newport	--	--	--	--	4.7	0%
	Coos Bay Crescent City	7	9	4	0.9	29.2	3%
	Eureka Fort Bragg	7	7	6	1.7	39.4	4%
	San Francisco Monterey Morro Bay	7	7	4	2.0	41.4	5%
	Santa Barbara Los Angeles	--	--	--	--	5.4	0%
	Hook-and-line gear	10	10	8	2.1	58.0	4%
	Pot gear	12	14	7	2.5	65.1	4%
	North of 40°10' N	10	12	7	1.7	43.4	4%
	40°10' N to 36° N	11	11	7	2.6	49.7	5%
	South of 36° N	*	*	*	*	30.1	*
	Coastwide total	*	*	*	*	123.1	*

* Not reported due to confidentiality.

Note: The number of trips and vessels north and south of 40°10' N. latitude do not sum to coastwide totals because some vessels fish in both areas on the same trip. Also, any sets that are lacking spatial information are included in coastwide and port group totals only.

Table 2: Observed catch weight (mt), discard weight (mt) and percent discarded from observed 2007 limited entry sablefish-endorsed (primary) vessels by gear type and management area. Pot gear is reported coastwide to ensure adequate sample size and ensure confidentiality.

Limited Entry Sablefish-Endorsed Fishery	Longline						Pot			All gears		
	North of 40°10' N. lat.			40°10' N. lat. to 36° N. lat.			Coastwide			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Rebuilding species												
Bocaccio *	0.018	0.000	0.0%	--	--	--	--	--	--	0.018	0.000	0.0%
Canary rockfish	0.037	0.037	100.0%	--	--	--	--	--	--	0.037	0.037	100.0%
Cowcod *												
Darkblotched rockfish *	0.354	0.070	19.9%	0.017	0.000	0.0%	0.140	0.033	23.9%	0.511	0.104	20.3%
Pacific ocean perch *	0.054	0.013	23.4%	--	--	--	0.006	0.000	0.0%	0.060	0.013	21.1%
Widow rockfish	0.006	0.004	68.7%	--	--	--	--	--	--	0.006	0.004	68.7%
Yelloweye rockfish *	0.145	0.145	100.0%	--	--	--	--	--	--	0.145	0.145	100.0%
Non-rebuilding species												
Arrowtooth flounder	17.863	17.368	97.2%	--	--	--	0.456	0.452	99.3%	18.319	17.821	97.3%
Big skate	0.050	0.000	0.0%	--	--	--	--	--	--	0.050	0.000	0.0%
California skate	0.019	0.019	100.0%	--	--	--	--	--	--	0.019	0.019	100.0%
Chilipepper rockfish	0.096	0.089	92.7%	--	--	--	--	--	--	0.096	0.089	92.7%
Dover sole	0.286	0.152	53.2%	0.136	0.136	100.0%	0.161	0.067	41.3%	0.584	0.355	60.8%
English sole	0.001	0.001	100.0%	--	--	--	--	--	--	0.001	0.001	100.0%
Unspecified flatfish	0.028	0.028	100.0%	--	--	--	--	--	--	0.028	0.028	100.0%
Grenadier	0.527	0.527	100.0%	3.041	0.206	6.8%	--	--	--	3.568	0.733	20.6%
Giant Grenadier		0.265			--			--			0.265	
Grenadier Unid		--			0.004			--			0.004	
Pacific Grenadier		0.262			0.203			--			0.465	
Popeye Grenadier		0.000			--			--			0.000	
Lingcod	1.231	0.230	18.7%	--	--	--	2.844	1.958	68.8%	4.075	2.189	53.7%
Other unspecified rockfish	0.002	0.000	0.0%	--	--	--	--	--	--	0.002	0.000	0.0%
Pacific cod	0.024	0.009	38.1%	--	--	--	--	--	--	0.024	0.009	38.1%
Petrale sole	0.130	0.035	26.8%	--	--	--	0.007	0.006	86.7%	0.137	0.041	29.7%
Sablefish	307.168	26.841	8.7%	19.144	1.429	7.5%	121.631	31.665	26.0%	447.943	59.936	13.4%
Shelf rockfish	1.376	0.221	16.0%	--	--	--	0.007	0.001	14.2%	1.383	0.222	16.0%
Flag rockfish		0.000			--			--			0.000	
Greenstriped rockfish		0.139			--			--			0.139	
Redstripe rockfish		0.000			--			--			0.000	
Unspecified shelf rockfish		0.001			--			0.000			0.001	
Rosethorn rockfish		0.042			--			0.001			0.043	
Silvergray rockfish		0.037			--			--			0.037	
Spotted rockfish (unidentified)		0.000			--			--			0.000	
Stripetail rockfish		0.000			--			--			0.000	
Tiger rockfish		0.000			--			--			0.000	

* Mislabeling or grouping of these species on non-distributed fish tickets may cause retained catch weights to be underestimated.

Limited Entry Sablefish-Endorsed Fishery	Longline						Pot			All gears		
	North of 40°10' N. lat.			40°10' N. lat. to 36° N. lat.			Coastwide			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Non-rebuilding species (cont.)												
Skates	22.102	14.222	64.3%	0.935	0.785	84.0%	0.001	0.001	100.0%	23.039	15.009	65.1%
Aleutian skate		0.035			--			--			0.035	
Black skate		0.085			--			--			0.085	
Longnose skate		13.342			0.743			--			14.085	
Sandpaper skate		0.181			0.012			--			0.193	
Unspecified skate		0.580			0.030			0.001			0.611	
Slope rockfish	27.029	3.663	13.6%	0.096	0.003	3.3%	2.890	0.143	5.0%	30.016	3.809	12.7%
Aurora rockfish		0.002			0.000			0.000			0.003	
Bank rockfish		0.000			--			--			0.000	
Blackgill rockfish		0.227			0.003			0.002			0.232	
Redbanded rockfish		0.529			0.000			0.025			0.554	
Unspecified slope rockfish		0.001			--			0.000			0.001	
Rougheye rockfish		2.580			--			0.002			2.582	
Sharpchin rockfish		0.003			--			--			0.003	
Shortraker rockfish		0.098			--			0.000			0.098	
Shortraker/Rougheye rockfish		0.182			--			0.109			0.291	
Splitnose Rockfish		0.037			--			0.003			0.040	
Spotted rockfish (unidentified)		0.000			--			--			0.000	
Yellowmouth rockfish		0.004			--			0.001			0.005	
Soupfin shark	0.003	0.000	0.0%	--	--	--	--	--	--	0.003	0.000	0.0%
Spiny dogfish	106.621	63.094	59.2%	0.090	0.090	100.0%	0.328	0.328	100.0%	107.039	63.512	59.3%
Spotted ratfish	0.531	0.531	100.0%	0.028	0.027	96.4%	--	--	--	0.559	0.558	99.8%
Thornyheads	4.125	0.923	22.4%	0.604	0.079	13.1%	0.005	0.002	31.9%	4.733	1.004	21.2%
Longspine Thornyhead		0.001			0.003			0.000			0.004	
Shortspine Thornyhead		0.907			0.031			0.001			0.939	
Mixed thornyheads		0.015			0.046			--			0.061	
Yellowtail rockfish	1.658	0.073	4.4%	--	--	--	--	--	--	1.658	0.073	4.4%
Non-groundfish species												
Albacore tuna	0.115	0.026	22.3%	--	--	--	--	--	--	0.115	0.026	22.3%
Blue shark	6.517	6.417	98.5%	--	--	--	--	--	--	6.517	6.417	98.5%
Brown cat shark	0.091	0.089	97.9%	0.025	0.025	100.0%	0.001	0.001	100.0%	0.117	0.115	98.3%
California slickhead	0.001	0.001	100.0%	0.009	0.009	100.0%	--	--	--	0.009	0.009	100.0%
Dog (chum) salmon	0.010	0.000	0.0%	--	--	--	--	--	--	0.010	0.000	0.0%
Dungeness crab	0.006	0.006	100.0%	--	--	--	0.027	0.027	100.0%	0.033	0.033	100.0%
Filetail cat shark	--	--	--	0.015	0.015	100.0%	--	--	--	0.015	0.015	100.0%
Giant wrymouth	0.069	0.069	100.0%	--	--	--	--	--	--	0.069	0.069	100.0%
Hagfish (unidentified)	0.005	0.005	100.0%	--	--	--	--	--	--	0.005	0.005	100.0%
Hermit crab (unidentified)	--	--	--	--	--	--	0.007	0.007	100.0%	0.007	0.007	100.0%
King (Chinook) salmon	0.038	0.000	0.0%	--	--	--	--	--	--	0.038	0.000	0.0%

Limited Entry Sablefish-Endorsed Fishery	Longline						Pot			All gears		
	North of 40°10' N. lat.			40°10' N. lat. to 36° N. lat.			Coastwide			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Non-groundfish species (cont.)												
Octopus (unidentified)	0.000	0.000	100.0%	--	--	--	0.026	0.012	46.0%	0.026	0.012	46.3%
Opah	0.010	0.000	0.0%	--	--	--	--	--	--	0.010	0.000	0.0%
Pacific dogfish shark	0.085	0.085	100.0%	--	--	--	--	--	--	0.085	0.085	100.0%
Pacific flatnose	0.004	0.004	100.0%	0.038	0.038	100.0%	--	--	--	0.042	0.042	100.0%
Pacific hagfish	0.001	0.001	100.0%	--	--	--	0.000	0.000	100.0%	0.001	0.001	100.0%
Pacific hake	0.024	0.024	100.0%	--	--	--	--	--	--	0.024	0.024	100.0%
Pacific halibut	46.797	38.629	82.5%	--	--	--	0.828	0.828	100.0%	47.625	39.457	82.9%
Pacific pomfret	0.008	0.008	100.0%	--	--	--	--	--	--	0.008	0.008	100.0%
Pacific sleeper shark	0.020	0.020	100.0%	--	--	--	--	--	--	0.020	0.020	100.0%
Sea cucumber (unidentified)	0.001	0.001	100.0%	--	--	--	--	--	--	0.001	0.001	100.0%
Sevengill shark	0.017	0.000	0.0%	--	--	--	--	--	--	0.017	0.000	0.0%
Shark (unidentified)	4.362	4.362	100.0%	--	--	--	--	--	--	4.362	4.362	100.0%
Tanner crab (unidentified)	0.003	0.003	100.0%	--	--	--	--	--	--	0.003	0.003	100.0%
Tanneri tanner crab	0.008	0.008	100.0%	0.034	0.034	100.0%	0.003	0.003	100.0%	0.045	0.045	100.0%
Urchin (unidentified)	--	--	--	--	--	--	0.022	0.022	100.0%	0.022	0.022	100.0%
Wrymouth (unidentified)	0.004	0.004	100.0%	--	--	--	--	--	--	0.004	0.004	100.0%

Table 3: Discard ratios and standard errors from observed trips in the 2007 limited entry sablefish-endorsed (primary) fishery. Ratios are computed as the observed discard weight divided by the weight of retained sablefish. Species are grouped according to Appendix C.

Limited Entry Sablefish-Endorsed Fishery	Longline				Pot		All gears	
	North of 40°10' N. lat.		40°10' N. lat. to 36° N. lat.		Coastwide		Coastwide	
	Discard ratio	SE	Discard ratio	SE	Discard ratio	SE	Discard ratio	SE
Rebuilding species								
Bocaccio *	NA	NA	NA	NA	NA	NA	NA	NA
Canary rockfish	0.0001	0.0071	NA	NA	NA	NA	0.0001	0.0068
Cowcod *	NA	NA	NA	NA	NA	NA	NA	NA
Darkblotched rockfish	0.0003	0.0019	0.0000	NA	0.0004	0.0014	0.0003	0.0011
Pacific ocean perch *	0.0000	0.0014	NA	NA	0.0000	NA	0.0000	0.0006
Widow rockfish	0.0000	0.0091	NA	NA	NA	NA	0.0000	0.0088
Yelloweye rockfish	0.0005	0.0135	NA	NA	NA	NA	0.0004	0.0130
Other species								
Arrowtooth flounder	0.0620	0.0198	NA	NA	0.0050	0.0089	0.0459	0.0160
Big skate	0.0000	NA	NA	NA	NA	NA	0.0000	NA
Dover sole	0.0005	0.0008	0.0077	0.0068	0.0007	0.0007	0.0009	0.0008
Dungeness crab	0.0000	0.0011	NA	NA	0.0003	0.0187	0.0001	0.0106
English sole	0.0000	NA	NA	NA	NA	NA	0.0000	NA
Lingcod	0.0008	0.0028	NA	NA	0.0218	0.0516	0.0056	0.0161
Longnose skate	0.0476	0.0122	0.0420	0.0276	NA	NA	0.0363	0.0107
Longspine thornyhead	0.0000	0.0015	0.0012	0.0016	0.0000	NA	0.0001	0.0011
Other flatfish	0.0001	0.0076	NA	NA	0.0000	0.0007	0.0001	0.0027
Other groundfish	0.0019	0.0042	0.0015	0.0024	NA	NA	0.0014	0.0035
Other nongroundfish	0.0396	0.0296	0.0049	0.0038	0.0005	0.0007	0.0289	0.0222
Other shelf rockfish	0.0011	0.0009	NA	NA	0.0000	0.0001	0.0008	0.0009
Other slope rockfish	0.0131	0.0030	0.0002	0.0002	0.0016	0.0015	0.0098	0.0025
Pacific cod *	0.0000	0.0021	NA	NA	NA	NA	0.0000	0.0021
Pacific hake	0.0001	0.0012	NA	NA	NA	NA	0.0001	0.0011
Pacific halibut	0.1378	0.0411	NA	NA	0.0092	0.0159	0.1017	0.0353
Petrale sole	0.0001	0.0016	NA	NA	0.0001	0.0007	0.0001	0.0011
Sablefish	0.0957	0.0087	0.0807	0.0300	0.3520	0.0536	0.1545	0.0135
Shortspine thornyhead	0.0033	0.0014	0.0033	0.0021	0.0000	0.0004	0.0025	0.0013
Spiny dogfish	0.2251	0.0770	0.0051	0.0068	0.0036	0.0110	0.1637	0.0658
Splitnose rockfish *	NA	NA	NA	NA	0.0000	NA	0.0000	NA
Tanner crab	0.0000	0.0009	0.0019	0.0047	0.0000	0.0015	0.0001	0.0021
Unspecified grenadiers	0.0019	0.0609	0.0116	0.0127	NA	NA	0.0019	0.0276
Unspecified skate	0.0032	0.0052	0.0024	0.0043	0.0000	NA	0.0024	0.0046
Yellowtail rockfish *	0.0003	0.0016	NA	NA	NA	NA	0.0002	0.0015

* Species group assignment varies according to area strata (see Appendix C).

Table 4: Bycatch ratios and standard errors from observed trips in the 2007 limited entry sablefish-endorsed (primary) fishery. Ratios are computed as the observed catch weight divided by the weight of retained sablefish. Species are grouped according to Appendix C.

Limited Entry Sablefish-Endorsed Fishery	Longline				Pot		All gears	
	North of 40°10' N. lat.		40°10' N. lat. to 36° N. lat.		Coastwide		Coastwide	
	Bycatch ratio	SE	Bycatch ratio	SE	Bycatch ratio	SE	Bycatch ratio	SE
Rebuilding species								
Bocaccio *	NA	NA	NA	NA	NA	NA	NA	NA
Canary rockfish	0.0001	0.0071	NA	NA	NA	NA	0.0001	0.0068
Cowcod *	NA	NA	NA	NA	NA	NA	NA	NA
Darkblotched rockfish	0.0013	0.0100	0.0010	0.0032	0.0016	0.0026	0.0013	0.0047
Pacific ocean perch *	0.0001	0.0016	NA	NA	0.0001	0.0002	0.0001	0.0008
Widow rockfish	0.0000	0.0050	NA	NA	NA	NA	0.0000	0.0048
Yelloweye rockfish	0.0005	0.0135	NA	NA	NA	NA	0.0004	0.0130
Other species								
Arrowtooth flounder	0.0637	0.0199	NA	NA	0.0051	0.0088	0.0472	0.0161
Big skate	0.0002	0.0107	NA	NA	NA	NA	0.0001	0.0102
Dover sole	0.0010	0.0010	0.0077	0.0068	0.0018	0.0015	0.0015	0.0010
Dungeness crab	0.0000	0.0011	NA	NA	0.0003	0.0187	0.0001	0.0106
English sole	0.0000	NA	NA	NA	NA	NA	0.0000	NA
Lingcod	0.0044	0.0076	NA	NA	0.0316	0.0549	0.0105	0.0184
Longnose skate	0.0612	0.0134	0.0486	0.0290	NA	NA	0.0464	0.0115
Longspine thornyhead	0.0001	0.0059	0.0111	0.0091	0.0000	NA	0.0006	0.0053
Other flatfish	0.0001	0.0076	NA	NA	0.0000	0.0006	0.0001	0.0026
Other groundfish	0.0019	0.0042	0.0016	0.0023	NA	NA	0.0015	0.0035
Other nongroundfish	0.0405	0.0297	0.0049	0.0038	0.0006	0.0009	0.0296	0.0222
Other shelf rockfish	0.0053	0.0018	NA	NA	0.0001	0.0004	0.0039	0.0016
Other slope rockfish	0.0965	0.0082	0.0054	0.0041	0.0321	0.0151	0.0774	0.0068
Pacific cod *	0.0001	0.0022	NA	NA	NA	NA	0.0001	0.0021
Pacific hake	0.0001	0.0012	NA	NA	NA	NA	0.0001	0.0011
Pacific halibut	0.1669	0.0428	NA	NA	0.0092	0.0159	0.1227	0.0364
Petrale sole	0.0005	0.0022	NA	NA	0.0001	0.0007	0.0004	0.0016
Sablefish	1.0957	0.0830	1.0807	0.2668	1.3520	0.1577	1.1545	0.0714
Shortspine thornyhead	0.0146	0.0033	0.0230	0.0112	0.0001	0.0006	0.0116	0.0029
Spiny dogfish	0.3803	0.1140	0.0051	0.0068	0.0036	0.0110	0.2759	0.0967
Splitnose rockfish *	NA	NA	NA	NA	0.0000	NA	0.0000	NA
Tanner crab	0.0000	0.0009	0.0019	0.0047	0.0000	0.0015	0.0001	0.0021
Unspecified grenadiers	0.0019	0.0609	0.1717	0.2334	NA	NA	0.0092	0.1289
Unspecified skate	0.0177	0.0092	0.0042	0.0047	0.0000	NA	0.0130	0.0079
Yellowtail rockfish *	0.0059	0.0449	NA	NA	NA	NA	0.0043	0.0431

* Species group assignment varies according to area strata (see Appendix C).

Table 5a: Observed catch weight (mt), discard weight (mt) and percent discarded from observed limited entry non-sablefish-endorsed trips in 2007 by gear type and management area.

Limited Entry Non-Sablefish-Endorsed Fishery	Longline								
	North of 36° N. lat.			South of 36° N. lat.			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Rebuilding species									
Bocaccio *	0.201	0.201	100.0%	0.040	0.000	0.0%	0.240	0.201	83.4%
Canary rockfish									
Cowcod *	--	--	--	0.001	0.001	100.0%	0.001	0.001	100.0%
Darkblotched rockfish *	0.006	0.000	0.0%	0.051	0.000	0.0%	0.057	0.000	0.0%
Pacific ocean perch *									
Widow rockfish									
Yelloweye rockfish *									
Non-rebuilding species									
Arrowtooth flounder	0.009	0.007	80.4%	--	--	--	0.009	0.007	80.4%
Big skate	0.002	0.002	100.0%	--	--	--	0.002	0.002	100.0%
Bronzespotted rockfish	--	--	--	0.003	0.000	0.0%	0.003	0.000	0.0%
Chilipepper rockfish	0.137	0.000	0.0%	0.002	0.000	0.0%	0.139	0.000	0.0%
Dover sole	0.108	0.108	100.0%	0.209	0.194	92.6%	0.317	0.302	95.1%
Unspecified flatfish	--	--	--	0.006	0.000	0.0%	0.006	0.000	0.0%
Grenadier	2.063	0.433	21.0%	0.103	0.103	100.0%	2.166	0.535	24.7%
California grenadier		--			0.025			0.025	
Giant grenadier		0.025			0.005			0.030	
Unidentified grenadier		--			0.070			0.070	
Pacific grenadier		0.407			0.004			0.411	
Lingcod	0.017	0.000	0.0%	0.005	0.005	100.0%	0.022	0.005	24.3%
Other unspecified rockfish	0.011	0.000	0.0%	0.060	0.000	0.0%	0.071	0.000	0.0%
Petrale sole	0.001	0.001	100.0%	--	--	--	0.001	0.001	100.0%
Sablefish	11.782	5.190	44.0%	10.174	0.297	2.9%	21.956	5.487	25.0%
Shelf rockfish	0.001	0.001	100.0%	0.079	0.005	6.4%	0.079	0.006	7.2%
Chameleon rockfish		--			0.000			0.000	
Flag rockfish		--			0.000			0.000	

* Mislabeling or grouping of these species on non-distributed fish tickets may cause retained catch weights to be underestimated.

Limited Entry Non-Sablefish-Endorsed Fishery	Longline								
	North of 36° N. lat.			South of 36° N. lat.			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Non-rebuilding species (cont.)									
Shelf rockfish (cont.)									
Greenblotched rockfish		--			0.000			0.000	
Greenspotted rockfish		--			0.000			0.000	
Honeycomb rockfish		--			0.000			0.000	
Unspecified shelf rockfish		--			0.000			0.000	
Rosethorn rockfish		0.001			0.005			0.005	
Speckled rockfish		--			0.000			0.000	
Vermilion rockfish		--			0.000			0.000	
Skates	0.539	0.459	85.0%	2.522	2.522	100.0%	3.061	2.980	97.4%
Black skate		--			0.227			0.227	
Longnose skate		0.402			1.963			2.365	
Sandpaper skate		0.013			0.004			0.017	
Unspecified skate		0.043			0.328			0.371	
Slope rockfish	0.201	0.012	5.8%	1.633	0.013	0.8%	1.834	0.025	1.4%
Aurora rockfish		0.003			0.001			0.004	
Bank rockfish		0.002			0.000			0.002	
Blackgill rockfish		0.004			0.011			0.015	
Redbanded rockfish		0.002			--			0.002	
Unspecified slope rockfish		0.000			0.000			0.000	
Rougheye rockfish		0.000			--			0.000	
Shortraker rockfish		0.000			--			0.000	
Splitnose rockfish		--			0.001			0.001	
Spiny dogfish	1.240	1.111	89.5%	0.061	0.061	100.0%	1.302	1.172	90.0%
Spotted ratfish	0.009	0.009	100.0%	0.039	0.011	27.3%	0.048	0.020	40.8%
Squarespot rockfish	--	--	--	0.051	0.000	0.0%	0.051	0.000	0.0%
Thornyheads	1.124	0.059	5.3%	18.612	1.378	7.4%	19.736	1.437	7.3%
Longspine thornyhead		0.026			0.331			0.358	
Shortspine thornyhead		0.031			1.021			1.052	
Mixed thornyheads		0.002			0.026			0.027	

Limited Entry Non-Sablefish-Endorsed Fishery	Longline								
	North of 36° N. lat.			South of 36° N. lat.			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Non-groundfish species									
Black hagfish	--	--	--	0.011	0.011	100.0%	0.011	0.011	100.0%
Blue shark	0.021	0.021	100.0%	0.234	0.234	100.0%	0.255	0.255	100.0%
Bonito (shortfin mako) shark	--	--	--	0.012	0.005	40.8%	0.012	0.005	40.8%
Brown cat shark	0.050	0.050	100.0%	0.309	0.309	100.0%	0.359	0.359	100.0%
California slickhead	0.004	0.004	100.0%	0.053	0.053	100.0%	0.057	0.057	100.0%
Cat shark (unidentified)	--	--	--	0.001	0.001	100.0%	0.001	0.001	100.0%
Deep-sea rock crab	--	--	--	0.001	0.001	100.0%	0.001	0.001	100.0%
Filetail cat shark	0.096	0.096	100.0%	0.494	0.494	100.0%	0.590	0.590	100.0%
Hagfish (unidentified)	0.000	0.000	100.0%	0.022	0.022	99.0%	0.023	0.022	99.0%
Longnose cat shark	0.003	0.003	100.0%	0.000	0.000	100.0%	0.003	0.003	100.0%
Octopus (unidentified)	--	--	--	0.016	0.009	58.9%	0.016	0.009	58.9%
Other unspecified nongroundfish	--	--	--	0.073	0.073	100.0%	0.073	0.073	100.0%
Pacific black dogfish	--	--	--	0.038	0.038	100.0%	0.038	0.038	100.0%
Pacific bonito	--	--	--	0.003	0.000	0.0%	0.003	0.000	0.0%
Pacific flatnose	0.031	0.031	100.0%	0.001	0.001	100.0%	0.032	0.032	100.0%
Pacific hake	0.001	0.001	100.0%	0.727	0.224	30.8%	0.728	0.226	31.0%
Pacific halibut	0.125	0.125	100.0%	--	--	--	0.125	0.125	100.0%
Pacific mackerel	--	--	--	0.006	0.000	3.8%	0.006	0.000	3.8%
Pacific sleeper shark	0.011	0.011	100.0%	0.004	0.004	100.0%	0.015	0.015	100.0%
Scarlet king crab	--	--	--	0.001	0.001	100.0%	0.001	0.001	100.0%
Sea cucumber (unidentified)	--	--	--	0.023	0.023	100.0%	0.023	0.023	100.0%
Shark (unidentified)	0.036	0.036	100.0%	2.061	2.061	100.0%	2.097	2.097	100.0%
Sixgill shark	0.024	0.024	100.0%	0.005	0.005	100.0%	0.030	0.030	100.0%
Slickhead (unidentified)	--	--	--	0.012	0.012	100.0%	0.012	0.012	100.0%
Squid (unidentified)	--	--	--	0.150	0.102	68.2%	0.150	0.102	68.2%
Tanneri tanner crab	0.023	0.023	100.0%	0.002	0.002	100.0%	0.025	0.025	100.0%

Table 5b: Observed catch weight (mt), discard weight (mt) and percent discarded from observed limited entry non-sablefish-endorsed trips in January through April of 2008 by gear type and management area.

Limited Entry Non-Sablefish-Endorsed Fishery	Longline								
	North of 36° N. lat.			South of 36° N. lat.			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Rebuilding species									
Bocaccio *	--	--	--	--	--	--	--	--	--
Canary rockfish	--	--	--	--	--	--	--	--	--
Cowcod *	--	--	--	--	--	--	--	--	--
Darkblotched rockfish *	--	--	--	--	--	--	--	--	--
Pacific ocean perch *	--	--	--	--	--	--	--	--	--
Widow rockfish	--	--	--	--	--	--	--	--	--
Yelloweye rockfish *	--	--	--	--	--	--	--	--	--
Non-rebuilding species									
Dover sole	0.005	0.005	100.0%	0.105	0.105	100.0%	0.110	0.110	100.0%
Grenadier	1.770	0.317	17.9%	0.004	0.004	100.0%	1.774	0.320	18.1%
Giant grenadier		0.193			--			0.193	
Pacific grenadier		0.124			0.002			0.125	
Unspecified grenadier		--			0.002			0.002	
Sablefish	2.167	0.566	26.1%	0.103	0.011	11.0%	2.270	0.577	25.4%
Skates	0.160	0.143	89.2%	0.129	0.129	100.0%	0.290	0.272	94.0%
Longnose skate		0.118			0.129			0.248	
Sandpaper skate		0.002			--			0.002	
Unspecified skate		0.023			--			0.023	
Slope rockfish	0.053	0.000	0.0%	0.003	0.000	12.9%	0.056	0.000	0.7%
Aurora rockfish		--			0.000			0.000	
Blackgill rockfish		0.000			0.000			0.000	
Spiny dogfish	0.007	0.007	100.0%	0.024	0.024	100.0%	0.031	0.031	100.0%
Spotted ratfish	0.005	0.005	100.0%	--	--	--	0.005	0.005	100.0%
Thornyheads	0.388	0.050	13.0%	9.897	0.495	5.0%	10.285	0.545	5.3%
Longspine Thornyhead		0.037			0.156			0.193	
Shortspine Thornyhead		0.013			0.166			0.179	
Mixed thornyheads		--			0.173			0.173	

* Mislabeling or grouping of these species on non-distributed fish tickets may cause retained catch weights to be underestimated.

Limited Entry Non-Sablefish-Endorsed Fishery	Longline								
	North of 36° N. lat.			South of 36° N. lat.			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Non-groundfish species									
Brown cat shark	0.006	0.006	100.0%	0.055	0.055	100.0%	0.061	0.061	100.0%
Filetail cat shark	0.033	0.033	100.0%	0.010	0.010	100.0%	0.043	0.043	100.0%
Hagfish (unidentified)	--	--	--	0.005	0.005	100.0%	0.005	0.005	100.0%
Octopus (unidentified)	--	--	--	0.002	0.001	46.7%	0.002	0.001	46.7%
Pacific flatnose	0.147	0.147	100.0%	--	--	--	0.147	0.147	100.0%
Pacific hake	0.031	0.031	100.0%	0.058	0.058	100.0%	0.088	0.088	100.0%
Pacific mackerel	--	--	--	0.001	0.001	100.0%	0.001	0.001	100.0%
Pacific tom cod	0.159	0.000	0.0%	--	--	--	0.159	0.000	0.0%
Shark (unidentified)	--	--	--	0.036	0.036	100.0%	0.036	0.036	100.0%
Tanneri tanner crab	0.003	0.003	100.0%	0.001	0.001	100.0%	0.004	0.004	100.0%
Top smelt	--	--	--	0.001	0.001	100.0%	0.001	0.001	100.0%

Table 6: Discard ratios and standard errors from observed trips in the 2007 limited entry non-sablefish-endorsed fishery. North of 36° N latitude, ratios are computed as observed discard weight divided by the weight of retained sablefish. South of 36° N latitude, ratios are computed as the observed discard weight divided by the weight of retained FMP groundfish species (excluding Pacific hake).* Species are grouped according to Appendix C.

Limited Entry Non-Sablefish Endorsed Fishery	Longline			
	North of 36° N. lat.		South of 36° N. lat.	
	Discard ratio	SE	Discard ratio	SE
Rebuilding species				
Bocaccio **	0.0304	NA	0.0000	NA
Canary rockfish	NA	NA	NA	NA
Cowcod **	NA	NA	0.0000	NA
Darkblotched rockfish	0.0000	NA	0.0000	NA
Pacific ocean perch **	NA	NA	NA	NA
Widow rockfish	NA	NA	NA	NA
Yelloweye rockfish	NA	NA	NA	NA
Other species				
Arrowtooth flounder	0.0011	0.0423	NA	NA
Big skate	0.0004	NA	NA	NA
Chilipepper **	0.0000	NA	0.0000	NA
Dover sole	0.0164	0.0527	0.0069	0.0212
Lingcod	0.0000	NA	0.0002	0.0210
Longnose skate	0.0610	0.1617	0.0702	0.1894
Longspine thornyhead	0.0041	0.0050	0.0122	0.0061
Other flatfish	0.0000	NA	0.0000	NA
Other groundfish	0.0014	0.0153	0.0004	0.0148
Other nongroundfish	0.0419	0.0212	0.1238	0.1449
Other shelf rockfish	0.0001	0.0038	0.0002	0.0046
Other slope rockfish	0.0018	0.0027	0.0004	0.0025
Pacific hake	0.0002	0.0018	0.0080	0.0387
Pacific halibut	0.0190	0.2057	NA	NA
Petrale sole	0.0001	NA	NA	NA
Sablefish	0.7872	0.2416	0.0106	0.0136
Shortspine thornyhead	0.0049	0.0027	0.0371	0.0181
Spiny dogfish	0.1685	0.5895	0.0022	0.1001
Splitnose rockfish **	NA	NA	0.0000	0.0039
Tanner crab	0.0035	0.0081	0.0001	0.0059
Unspecified grenadiers	0.0656	0.1051	0.0037	0.0295
Unspecified skate	0.0086	0.0498	0.0196	0.1578

* When retained groundfish FMP species weight are used in the denominator, the weight is taken only from fish tickets so as to prevent double counting of species that are assigned different species identification codes by observers and processors on fish tickets (see Analysis section).

** Species group assignment varies according to area strata (see Appendix C).

Table 7: Bycatch ratios and standard errors from observed trips in the 2007 limited entry non-sablefish-endorsed fishery. North of 36° N latitude, ratios are computed as observed total catch weight over the weight of retained sablefish. South of 36° N latitude, ratios are computed as the observed total catch weight divided by the weight of retained FMP groundfish species (excluding Pacific hake).* Species are grouped according to Appendix C.

Limited Entry Non-Sablefish Endorsed Fishery	Longline			
	North of 36° N. lat.		South of 36° N. lat.	
	Bycatch ratio	SE	Bycatch ratio	SE
Rebuilding species				
Bocaccio **	0.0304	NA	0.0014	0.6575
Canary rockfish	NA	NA	NA	NA
Cowcod **	NA	NA	0.0000	NA
Darkblotched rockfish	0.0010	0.0215	0.0018	0.7881
Pacific ocean perch **	NA	NA	NA	NA
Widow rockfish	NA	NA	NA	NA
Yelloweye rockfish	NA	NA	NA	NA
Other species				
Arrowtooth flounder	0.0014	0.0331	NA	NA
Big skate	0.0004	NA	NA	NA
Chilipepper **	0.0208	NA	0.0001	NA
Dover sole	0.0164	0.0527	0.0075	0.0210
Lingcod	0.0025	0.0135	0.0002	0.0210
Longnose skate	0.0733	0.1708	0.0702	0.1894
Longspine thornyhead	0.0369	0.0341	0.0773	0.0548
Other flatfish	0.0000	NA	0.0002	0.0441
Other groundfish	0.0031	0.0134	0.0035	0.0765
Other nongroundfish	0.0419	0.0212	0.1263	0.1451
Other shelf rockfish	0.0002	0.0017	0.0044	0.0371
Other slope rockfish	0.0305	0.0321	0.0566	0.2356
Pacific hake	0.0002	0.0018	0.0260	0.2360
Pacific halibut	0.0190	0.2057	NA	NA
Petrale sole	0.0001	NA	NA	NA
Sablefish	1.7872	0.4243	0.3640	0.4117
Shortspine thornyhead	0.1337	0.0766	0.5886	0.2129
Spiny dogfish	0.1882	0.5870	0.0022	0.1001
Splitnose rockfish **	NA	NA	0.0022	0.1307
Tanner crab	0.0035	0.0081	0.0001	0.0059
Unspecified grenadiers	0.3129	0.3810	0.0037	0.0295
Unspecified skate	0.0086	0.0498	0.0200	0.1608

* When retained groundfish FMP species weight are used in the denominator, the weight is taken only from fish tickets so as to prevent double counting of species that are assigned different species identification codes by observers and processors on fish tickets (see Analysis section).

** Species group assignment varies according to area strata (see Appendix C).

Table 8a: Observed catch weight (mt), discard weight (mt) and percent discard in the open access fixed gear fishery for hook-and-line gears in 2007 by management area.

Open Access Fixed Gear Fishery	Hook-and-Line					
	North of 40°10' N. lat.			40°10' N. lat. to 36° N. lat.		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Rebuilding species						
Bocaccio *	--	--	--	--	--	--
Canary rockfish	--	--	--	--	--	--
Cowcod *	--	--	--	--	--	--
Darkblotched rockfish *	0.405	0.080	19.8%	0.001	0.000	0.0%
Pacific ocean perch *	0.005	0.001	27.9%	--	--	--
Widow rockfish	0.012	0.012	100.0%	0.024	0.000	0.0%
Yelloweye rockfish *	--	--	--	--	--	--
Non-rebuilding species						
Arrowtooth flounder	0.213	0.194	90.9%	--	--	--
Big skate	0.038	0.015	40.8%	--	--	--
Chilipepper rockfish	--	--	--	0.001	0.001	100.0%
Dover sole	0.014	0.007	54.1%	0.003	0.002	69.0%
Giant Grenadier	--	--	--	0.007	0.007	100.0%
Lingcod	0.075	0.016	21.2%	--	--	--
Sablefish	13.364	4.406	33.0%	0.846	0.029	3.5%
Shelf rockfish	0.006	0.001	13.6%	0.009	0.000	0.0%
Greenspotted rockfish		--			0.000	
Greenstriped rockfish		0.001			--	
Silvergray rockfish		0.000			--	
Skates	0.595	0.426	71.5%	0.092	0.014	15.6%
Aleutian skate		0.001			--	
Longnose skate		0.417			0.014	
Sandpaper skate		0.003			0.001	
Unspecified skate		0.005			0.000	
Slope rockfish	0.212	0.025	12.0%	0.061	0.013	21.9%
Aurora rockfish		0.003			0.001	
Blackgill rockfish		0.000			0.003	
Redbanded rockfish		0.007			0.010	
Unspecified slope rockfish		0.000			--	
Rougheye rockfish		0.011			--	
Shortraker/rougheye rockfish		0.005			--	
Splitnose rockfish		0.000			--	
Spiny dogfish	1.918	1.918	100.0%	0.359	0.359	100.0%
Spotted ratfish	0.009	0.009	100.0%	--	--	--
Shortspine thornyhead	0.026	0.023	89.2%	0.005	0.005	100.0%
Yellowtail rockfish	0.010	0.004	37.3%	--	--	--

* Mislabeling or grouping of these species on non-distributed fish tickets may cause retained catch weights to be underestimated.

Open Access Fixed Gear Fishery	Hook-and-Line					
	North of 40°10' N. lat.			40°10' N. lat. to 36° N. lat.		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Non-groundfish species						
Blue shark	0.117	0.106	91.1%	--	--	--
Brown cat shark	--	--	--	0.001	0.001	100.0%
Filetail cat shark	--	--	--	0.002	0.002	100.0%
Pacific hake	0.127	0.001	0.9%	--	--	--
Pacific halibut	0.820	0.820	100.0%	--	--	--
Pacific sleeper shark	0.014	0.014	100.0%	--	--	--

Table 8b: Observed catch weight (mt), discard weight (mt) and percent discard in the open access fixed gear fishery for pot gears in 2007 by management area.

Open Access Fixed Gear Fishery	Pot								
	North of 40°10' N. lat.			40°10' N. lat. to 36° N. lat.			South of 36° N. lat.		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Rebuilding species									
Bocaccio *	--	--	--	--	--	--	--	--	--
Canary rockfish	--	--	--	--	--	--	--	--	--
Cowcod *	--	--	--	--	--	--	--	--	--
Darkblotched rockfish *	--	--	--	0.025	0.018	73.5%	--	--	--
Pacific ocean perch *	--	--	--	--	--	--	--	--	--
Widow rockfish	--	--	--	--	--	--	--	--	--
Yelloweye rockfish *	--	--	--	--	--	--	--	--	--
Non-rebuilding species									
Arrowtooth flounder	0.003	0.003	100.0%	0.002	0.002	100.0%	--	--	--
Dover sole	--	--	--	0.025	0.025	100.0%	0.001	0.001	53.1%
Lingcod	0.043	0.043	100.0%	0.021	0.009	41.0%	--	--	--
Petrale sole	0.001	0.001	100.0%	0.001	0.001	100.0%	--	--	--
Sablefish	2.001	0.436	21.8%	5.722	1.102	19.3%	3.264	0.768	23.5%
Redstripe rockfish	--	--	--	0.000	0.000	100.0%	--	--	--
Slope rockfish	0.010	0.003	32.0%	0.008	0.007	88.7%	0.024	0.000	
Aurora rockfish		--			0.000			0.000	
Blackgill rockfish		0.000			0.003			0.000	
Redbanded rockfish		0.000			0.003			--	
Unspecified slope rockfish		0.000			--			--	
Rougheye rockfish		0.003			--			--	
Splitnose rockfish		--			0.001			0.000	
Spiny dogfish	0.019	0.019	100.0%	0.001	0.001	100.0%	--	--	--
Thornyheads	--	--	--	--	--	--	0.006	0.000	0.0%
Longspine thornyhead		--			--			0.000	
Shortspine thornyhead		--			--			0.000	
Non-groundfish species									
Black hagfish	--	--	--	--	--	--	0.001	0.001	100.0%
Decorator/spider crab (unidentified)	--	--	--	--	--	--	0.005	0.005	100.0%
King crab (unidentified)	--	--	--	--	--	--	0.003	0.003	100.0%
Pacific halibut	0.030	0.030	100.0%	--	--	--	--	--	--
Scarlet king crab	--	--	--	--	--	--	0.025	0.025	100.0%
Tanneri tanner crab	0.000	0.000	100.0%	0.014	0.014	100.0%	0.003	0.003	100.0%

* Mislabeling or grouping of these species on non-distributed fish tickets may cause retained catch weights to be underestimated.

Table 8c: Observed catch weight (mt), discard weight (mt) and percent discard in the open access fixed gear fishery by gear type in January through April of 2008.

Open Access Fixed Gear Fishery	Hook-and-Line			Pot		
	Coastwide			Coastwide		
	Total Catch (mt)	Discard (mt)	Total % discarded	Total Catch (mt)	Discard (mt)	Total % discarded
Rebuilding species						
Bocaccio *	--	--	--	--	--	--
Canary rockfish	--	--	--	--	--	--
Cowcod *	--	--	--	--	--	--
Darkblotched rockfish *	0.032	0.003	8.2%	0.003	0.003	100.0%
Pacific ocean perch *	--	--	--	--	--	--
Widow rockfish	--	--	--	--	--	--
Yelloweye rockfish *	--	--	--	--	--	--
Non-rebuilding species						
Arrowtooth flounder	0.005	0.004	81.8%	0.001	0.001	100.0%
Dover sole	0.000	0.000	100.0%	0.017	0.017	100.0%
Grenadier	0.443	0.039	8.7%	--	--	--
Giant Grenadier		0.016			--	
Pacific Grenadier		0.023			--	
Lingcod	--	--	--	0.015	0.015	100.0%
Petrale sole	--	--	--	0.011	0.011	100.0%
Sablefish	2.821	0.755	26.8%	2.832	0.316	11.2%
Longnose skate	0.128	0.110	86.1%	--	--	--
Slope rockfish	0.051	0.003	6.3%	0.023	0.006	26.1%
Aurora rockfish		--			0.001	
Blackgill rockfish		0.000			0.004	
Redbanded rockfish		0.003			0.001	
Rougheye Rockfish		0.000			--	
Spiny dogfish	1.453	0.202	13.9%	--	--	--
Thornyheads	0.071	0.071	100.0%	0.000	0.000	100.0%
Longspine Thornyhead		0.002			--	
Shortspine Thornyhead		0.069			0.000	
Non-groundfish species						
Brown cat shark	0.002	0.002	100.0%	--	--	--
Dungeness crab	--	--	--	0.001	0.001	100.0%
Filetail cat shark	--	--	--	0.001	0.001	100.0%
Pacific flatnose	0.002	0.002	100.0%	--	--	--
Pacific halibut	0.019	0.019	100.0%	0.010	0.010	100.0%
Tanneri tanner crab	0.004	0.004	100.0%	0.051	0.051	100.0%
Urchin (unidentified)	--	--	--	0.001	0.001	100.0%

* Mislabeling or grouping of these species on non-distributed fish tickets may cause retained catch weights to be underestimated.

Table 9a: Discard ratios and standard errors from observed vessels using hook-and-line gear in the 2007 open access fixed gear fishery. Since all observations of the hook-and-line portion of the fleet occured north of 36° N latitude, all ratios are computed as observed discard weight divided by the weight of retained sablefish. Species are grouped according to Appendix C.

Open Access Fixed Gear Fishery	Hook-and-Line			
	North of 40°10' N. lat.		40°10' N. lat. to 36° N. lat.	
	Discard ratio	SE	Discard ratio	SE
Rebuilding species				
Bocaccio *	NA	NA	NA	NA
Canary rockfish	NA	NA	NA	NA
Cowcod *	NA	NA	NA	NA
Darkblotched rockfish	0.0089	0.0778	0.0000	NA
Pacific ocean perch *	0.0001	NA	NA	NA
Widow rockfish	0.0013	0.0183	0.0000	NA
Yelloweye rockfish	NA	NA	NA	NA
Other species				
Arrowtooth flounder	0.0217	0.0296	NA	NA
Big skate	0.0017	0.0769	NA	NA
Chilipepper *	NA	NA	0.0018	NA
Dover sole	0.0008	0.0030	0.0026	0.0058
Lingcod	0.0018	0.0399	NA	NA
Longnose skate	0.0465	0.0752	0.0168	0.0310
Longspine thornyhead	NA	NA	NA	NA
Other groundfish	0.0009	0.0122	NA	NA
Other nongroundfish	0.0134	0.0554	0.0036	0.0054
Other shelf rockfish	0.0001	0.0025	0.0000	NA
Other slope rockfish	0.0029	0.0023	0.0165	0.0165
Pacific hake	0.0001	0.0085	NA	NA
Pacific halibut	0.0916	0.2059	NA	NA
Petrale sole	NA	NA	NA	NA
Sablefish	0.4919	0.1603	0.0360	0.0212
Shortspine thornyhead	0.0026	0.0087	0.0062	0.0096
Spiny dogfish	0.2141	0.3213	0.4393	0.8821
Splitnose rockfish *	NA	NA	NA	NA
Tanner crab	NA	NA	0.0005	NA
Unspecified grenadiers	NA	NA	0.0081	NA
Unspecified skate	0.0010	0.0082	0.0008	0.0050
Yellowtail rockfish *	0.0004	0.0285	NA	NA

* Species group assignment varies according to area strata (see Appendix C).

Table 9b: Discard ratios and standard errors from observed vessels using pot gear in the 2007 open access fixed gear fishery. North of 36° N latitude, ratios are computed as observed discard weight divided by the weight of retained sablefish. South of 36° N latitude, ratios are computed as the observed discard weight divided by the weight of retained FMP groundfish species (excluding Pacific hake).* Species are grouped according to Appendix C.

Open Access Fixed Gear Fishery	Pot					
	North of 40°10' N. lat.		40°10' N. lat. to 36° N. lat.		South of 36° N. lat.	
	Discard ratio	SE	Discard ratio	SE	Discard ratio	SE
Rebuilding species						
Bocaccio **	NA	NA	NA	NA	NA	NA
Canary rockfish	NA	NA	NA	NA	NA	NA
Cowcod **	NA	NA	NA	NA	NA	NA
Darkblotched rockfish	NA	NA	0.0040	0.0114	NA	NA
Pacific ocean perch **	NA	NA	NA	NA	NA	NA
Widow rockfish	NA	NA	NA	NA	NA	NA
Yelloweye rockfish	NA	NA	NA	NA	NA	NA
Other species						
Arrowtooth flounder	0.0017	0.0193	0.0004	NA	NA	NA
Big skate	NA	NA	NA	NA	NA	NA
Chilipepper **	NA	NA	NA	NA	NA	NA
Dover sole	NA	NA	0.0055	0.0074	0.0003	0.0106
Lingcod	0.0277	0.6495	0.0018	0.0270	NA	NA
Longnose skate	NA	NA	NA	NA	NA	NA
Longspine thornyhead	NA	NA	NA	NA	0.0000	NA
Other groundfish	NA	NA	NA	NA	NA	NA
Other nongroundfish	0.0002	NA	0.0000	NA	0.0136	0.0265
Other shelf rockfish	NA	NA	0.0001	NA	NA	NA
Other slope rockfish	0.0021	0.0286	0.0014	0.0018	0.0000	NA
Pacific hake	NA	NA	NA	NA	NA	NA
Pacific halibut	0.0192	0.0631	NA	NA	NA	NA
Petrale sole	0.0004	NA	0.0002	NA	NA	NA
Sablefish	0.2788	0.1159	0.2386	0.0692	0.3068	0.2578
Shortspine thornyhead	NA	NA	NA	NA	0.0000	NA
Spiny dogfish	0.0118	NA	0.0001	NA	NA	NA
Splitnose rockfish **	NA	NA	0.0001	0.0006	0.0000	NA
Tanner crab	0.0002	NA	0.0030	0.0088	0.0011	0.0078
Unspecified grenadiers	NA	NA	NA	NA	NA	NA
Unspecified skate	NA	NA	NA	NA	NA	NA
Yellowtail rockfish **	NA	NA	NA	NA	NA	NA

* When retained groundfish FMP species weight are used in the denominator, the weight is taken only from fish tickets so as to prevent double counting of species that are assigned different species identification codes by observers and processors on fish tickets (see Analysis section).

** Species group assignment varies according to area strata (see Appendix C).

Table 10a: Bycatch ratios and standard errors from observed vessels using hook-and-line gear in the 2007 open access fixed gear fishery. Since all observations of the hook-and-line portion of the fleet occured north of 36° N latitude, all ratios are computed as observed total catch weight divided by the weight of retained sablefish. Species are grouped according to Appendix

Open Access Fixed Gear Fishery	Hook-and-Line			
	North of 40°10' N. lat.		40°10' N. lat. to 36° N. lat.	
	Bycatch ratio	SE	Bycatch ratio	SE
Rebuilding species				
Bocaccio *	NA	NA	NA	NA
Canary rockfish	NA	NA	NA	NA
Cowcod *	NA	NA	NA	NA
Darkblotched rockfish	0.0452	0.1399	0.0011	NA
Pacific ocean perch *	0.0001	NA	NA	NA
Widow rockfish	0.0013	0.0183	0.0289	NA
Yelloweye rockfish	NA	NA	NA	NA
Other species				
Arrowtooth flounder	0.0238	0.0294	NA	NA
Big skate	0.0042	0.0394	NA	NA
Chilipepper *	NA	NA	0.0018	NA
Dover sole	0.0015	0.0043	0.0038	0.0040
Lingcod	0.0084	0.0557	NA	NA
Longnose skate	0.0542	0.0756	0.0912	0.1443
Longspine thornyhead	NA	NA	NA	NA
Other groundfish	0.0009	0.0122	NA	NA
Other nongroundfish	0.0146	0.0539	0.0036	0.0054
Other shelf rockfish	0.0006	0.0226	0.0111	NA
Other slope rockfish	0.0241	0.0161	0.0753	0.0482
Pacific hake	0.0142	0.9434	NA	NA
Pacific halibut	0.0916	0.2059	NA	NA
Petrale sole	NA	NA	NA	NA
Sablefish	1.4919	0.2698	1.0360	0.3470
Shortspine thornyhead	0.0029	0.0085	0.0062	0.0096
Spiny dogfish	0.2141	0.3213	0.4393	0.8821
Splitnose rockfish *	NA	NA	NA	NA
Tanner crab	NA	NA	0.0005	NA
Unspecified grenadiers	NA	NA	0.0081	NA
Unspecified skate	0.0122	0.0566	0.0219	0.1223
Yellowtail rockfish *	0.0011	0.0218	NA	NA

* Species group assignment varies according to area strata (see Appendix C).

Table 10b: Bycatch ratios and standard errors from observed vessels using pot gear in the 2007 open access fixed gear fishery. North of 36° N latitude, ratios are computed as observed total catch weight divided by the weight of retained sablefish. South of 36° N latitude, ratios are computed as the observed total catch weight divided by the weight of retained groundfish FMP species (excluding Pacific hake).* Species are grouped according to Appendix C.

Open Access Fixed Gear Fishery	Pot					
	North of 40°10' N. lat.		40°10' N. lat. to 36° N. lat.		South of 36° N. lat.	
	Bycatch ratio	SE	Bycatch ratio	SE	Bycatch ratio	SE
Rebuilding species						
Bocaccio **	NA	NA	NA	NA	NA	NA
Canary rockfish	NA	NA	NA	NA	NA	NA
Cowcod **	NA	NA	NA	NA	NA	NA
Darkblotched rockfish	NA	NA	0.0054	0.0111	NA	NA
Pacific ocean perch **	NA	NA	NA	NA	NA	NA
Widow rockfish	NA	NA	NA	NA	NA	NA
Yelloweye rockfish	NA	NA	NA	NA	NA	NA
Other species						
Arrowtooth flounder	0.0017	0.0193	0.0004	NA	NA	NA
Big skate	NA	NA	NA	NA	NA	NA
Chilipepper **	NA	NA	NA	NA	NA	NA
Dover sole	NA	NA	0.0055	0.0074	0.0006	0.0061
Lingcod	0.0277	0.6495	0.0045	0.0239	NA	NA
Longnose skate	NA	NA	NA	NA	NA	NA
Longspine thornyhead	NA	NA	NA	NA	0.0002	NA
Other groundfish	NA	NA	NA	NA	NA	NA
Other nongroundfish	0.0002	NA	0.0000	NA	0.0136	0.0265
Other shelf rockfish	NA	NA	0.0001	NA	NA	NA
Other slope rockfish	0.0065	0.0254	0.0016	0.0018	0.0090	0.0275
Pacific hake	NA	NA	NA	NA	NA	NA
Pacific halibut	0.0192	0.0631	NA	NA	NA	NA
Petrale sole	0.0004	NA	0.0002	NA	NA	NA
Sablefish	1.2788	0.3867	1.2386	0.3092	1.3032	0.9634
Shortspine thornyhead	NA	NA	NA	NA	0.0021	0.0223
Spiny dogfish	0.0118	NA	0.0001	NA	NA	NA
Splitnose rockfish **	NA	NA	0.0001	0.0006	0.0005	0.0040
Tanner crab	0.0002	NA	0.0030	0.0088	0.0011	0.0078
Unspecified grenadiers	NA	NA	NA	NA	NA	NA
Unspecified skate	NA	NA	NA	NA	NA	NA
Yellowtail rockfish **	NA	NA	NA	NA	NA	NA

* When retained groundfish FMP species weight are used in the denominator, the weight is taken only from fish tickets so as to prevent double counting of species that are assigned different species identification codes by observers and processors on fish tickets (see Analysis section).

** Species group assignment varies according to area strata (see Appendix C).

Table 11: Summary of the number of length measurements and the number of individual fish sexed by WCGOP observers in the LE sablefish-endorsed, LE non-sablefish-endorsed, and open access fixed gear fisheries from September 2003 through April 2008. The date range of biological data for each species is also provided.

	Years available	# lengths	# sexes
Rebuilding species			
Bocaccio	2006 - 2007	15	0
Canary rockfish	2004 - Apr 2008	101	65
Cowcod	2004	1	0
Darkblotched rockfish	2004 - Apr 2008	156	62
Pacific ocean perch	2004 - 2007	16	3
Widow rockfish	2005, 2007	10	2
Yelloweye rockfish	2004 - 2007	168	127
Other species			
Arrowtooth flounder	2005, 2007	2	0
Aurora rockfish	2004, Jan-Apr 2008	39	0
Black rockfish	2006	4	0
Blackgill rockfish	2004 - Apr 2008	27	0
Blue shark	2007	1	1
Brown rockfish	2006	9	0
Cabezon	2006	7	0
Dover sole	2007	3	0
Dungeness crab	2007	10	10
Gopher rockfish	2006	2	0
Greenstriped rockfish	2005, 2007	28	0
Kelp greenling	2006	11	11
Lingcod	2004 - Apr 2008	262	3
Longnose skate	2006 - Apr 2008	7	6
Longspine thornyhead	2005 - Apr 2008	701	0
Olive rockfish	2006	1	0
Pacific black dogfish	2007	2	2
Pacific dogfish	2007	8	8
Pacific hake	2006	1	0
Pacific halibut	2004 - Apr 2008	42	0
Redbanded rockfish	2005 - 2007	43	1
Redstripe rockfish	2007	1	0
Rosethorn rockfish	2005 - 2007	9	0
Rougheye rockfish	2004 - 2007	320	193
Sablefish	2005 - Apr 2008	2770	13
Shortraker	2004 - 2007	35	18
Shortraker/Rougheye	2007	2	0
Shortspine thornyhead	2005 - Apr 2008	719	0
Silvergray rockfish	2004 -2005	9	9
Spiny dogfish	2006 - Apr 2008	2627	2583
Splitnose rockfish	2004, 2007	12	0
Spotted ratfish	2006	1	0
Tanner crab	Jan - Apr 2008	4	4
Vermilion rockfish	2006	1	0
Yellowtail rockfish	2006, 2007	41	0

Table 12: Summary of biological data for protected resources collected by WCGOP observers in the LE sablefish-endorsed, LE non-sablefish-endorsed, and open access fixed gear fisheries from September 2003 through April 2008. The number of length or weight measurements and the number of individuals sexed is reported for each year where data are available.

	# lengths / weights	# sexes
Salmon		
Coho salmon		
2005	1	1
2007	1	1

APPENDIX A.

WCGOP Database Table Hierarchy.

TRIPS

FISHING_ACTIVITIES

FISHING_LOCATIONS

CATCHES

SPECIES COMPOSITION

SPECIES_COMPOSITION_ITEMS

BIO_SPECIMENS

BIO_SPECIMEN_ITEMS

DISSECTIONS

Database Table Descriptions

The database tables listed below are a subset of the tables contained in the entire Oracle database. They represent the tables that are actually used to contain the WCGOP data collected by the WCGOP.

BIO_SPECIMENS	Sets of species physical measurements resulting from sampling catches occurring in a tow or set
BIO_SPECIMEN_ITEMS	Physical measurements collected for an individual fish, mammal or bird occurring in a biological sample
CATCHES	PacFIN catch category based on estimates of fish caught during a tow or set
CATCH_CATEGORIES	PacFIN catch categories
DISSECTIONS	Physical specimens collected for an individual fish, mammal or bird
FISHING_ACTIVITIES	Fishing tows or sets occurring during a trip
FISHING_LOCATIONS	Locations of tows or sets
PORTS	Coastal cities where fishing activity is based out of
SPECIES	Fish, mammal, and bird species that might be encountered during fishing
SPECIES_COMPOSITIONS	Sets of species weights and counts resulting from sampling catches occurring in a tow or set
SPECIES_COMPOSITIONS_ITEMS	Weights and counts for individual species occurring in a species composition sample
TRIPS	Sets of fishing activities that occur between the time a vessel leaves port and when it returns
VESSELS	Trawl, longline, pot, or other fishing vessels

APPENDIX B.

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*

ROCKFISH (cont)

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*
Silvergrey, *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 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 (Tables 3, 4, 6, 7, 9, and 10).

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP Groundfish
ALBC	ALBACORE	Other nongroundfish	Other nongroundfish	
APLC	ALASKA PLAICE	Other flatfish	Other 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
ASRK	PACIFIC ANGEL SHARK	Other nongroundfish	Other nongroundfish	
BABL	BLACK ABALONE	Other nongroundfish	Other nongroundfish	
BANK	BANK ROCKFISH	Other slope rockfish	Other slope rockfish	yes
BCAC	BOCACCIO	Other shelf rockfish	Bocaccio	yes
BCC1	NOM. BOCACCIO	Other shelf rockfish	Bocaccio	yes
BCLM	BUTTER CLAM	Other nongroundfish	Other nongroundfish	
BGL1	NOM. BLACKGILL ROCKFISH	Other slope rockfish	Other slope rockfish	yes
BKCR	BLUE KING CRAB	Other nongroundfish	Other nongroundfish	
BLCK	BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLGL	BLACKGILL ROCKFISH	Other slope rockfish	Other slope rockfish	yes
BLK1	NOM. BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLU1	NOM. BLUE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
BLUR	BLUE ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
BMCK	BULLET MACKERAL	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	Other slope 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 RF	Other shelf rockfish	Other shelf rockfish	yes
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	
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 RF	Other nearshore rockfish	Other nearshore rockfish	yes
CBZ1	NOM. CABEZON	Other groundfish	Cabezon	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP Groundfish
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	Other shelf rockfish	Chilipepper	yes
CLPR	CHILIPEPPER	Other shelf rockfish	Chilipepper	yes
CMCK	CHUB MACKERAL	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	Unspecified skate	Unspecified skate	yes
CSOL	CURLFIN SOLE	Other flatfish	Other flatfish	yes
CTRB	C-O SOLE	Other flatfish	Other 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
DBR1	NOM. DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	yes
DBRK	DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	yes
DCRB	DUNGENESS CRAB	Dungeness crab	Dungeness crab	
DLFT	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 flatfish	Other flatfish	
DSRK	SPINY DOGFISH	Spiny dogfish	Spiny dogfish	yes
DTRB	DIAMOND TURBOT	Other flatfish	Other 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
EELS	UNSPECIFIED EELS	Other nongroundfish	Other nongroundfish	
EGL1	NOM. ENGLISH SOLE	English sole	English sole	yes

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP Groundfish
EGLS	ENGLISH SOLE	English sole	English sole	yes
ESTR	EASTERN OYSTER	Other nongroundfish	Other nongroundfish	
ETNA	BIGEYE TUNA	Other nongroundfish	Other nongroundfish	
EULC	EULACHON	Other nongroundfish	Other nongroundfish	
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 flatfish	Other 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 RF	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	
GKCR	GOLDEN KING CRAB	Other nongroundfish	Other nongroundfish	
GPH1	NOM. GOPHER ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
GPHR	GOPHER ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
GPRW	GOLDEN PRAWN	Other nongroundfish	Other nongroundfish	
GRAS	GRASS ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
GRDR	UNSP. GRENADIERS	Unspecified grenadiers	Unspecified grenadiers	yes
GRS1	NOM. GRASS ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
GSP1	NOM. GREENSPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
GSPT	GREENSPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
GSQD	GIANT SQUID	Other nongroundfish	Other nongroundfish	
GSR1	NOM. GREENSTRIPED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
GSRK	GREENSTRIPED ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
GSRM	GHOST SHRIMP	Other nongroundfish	Other nongroundfish	
GSTG	GREEN STURGEON	Green sturgeon	Green sturgeon	
GTRB	GREENLAND TURBOT	Other flatfish	Other 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 flatfish	Other flatfish	
ISRK	BIGEYE THRESHER SHARK	Other nongroundfish	Other nongroundfish	
JCLM	CALIFORNIA JACKKNIFE CLAM	Other nongroundfish	Other nongroundfish	
JMCK	JACK MACKERAL	Other nongroundfish	Other nongroundfish	
KFSH	GIANT KELPFISH	Other nongroundfish	Other nongroundfish	
KGL1	NOM. KELP GREENLING	Other groundfish	Other groundfish	yes
KLP1	NOM. KELP ROCKFISH	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 Groundfish
KLPG	KELP GREENLING	Other groundfish	Other groundfish	yes
KLPR	KELP ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
KMKA	KAMCHATKA FLOUNDER	Other flatfish	Other 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 flatfish	Other flatfish	
LDB1	NOM. LONGFIN SANDDAB	Other flatfish	Other flatfish	
LOBS	CALIFORNIA 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 RF	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 RF	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	

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP Groundfish
OCTP	UNSP. OCTOPUS	Other nongroundfish	Other nongroundfish	
ODSR	OTHER DEMERSAL ROCKFISH	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 ROCKFISH	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
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 ROCKFISH	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 URCHIN	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
PGMY	PYGMY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
PHLB	PACIFIC HALIBUT	Pacific halibut	Pacific halibut	
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 ROCKFISH	Other slope rockfish	Other slope rockfish	yes
POP2	NOM. PACIFIC OCEAN PERCH	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

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP Groundfish
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 (HAKE)	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 RF	Other shelf rockfish	Other shelf rockfish	yes
RCK2	UNSP. BOLINA ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
RCK3	UNSP. DPWTR REDS ROCKFISH	Other slope rockfish	Other slope rockfish	yes
RCK4	UNSP. REDS ROCKFISH	Other groundfish	Other groundfish	yes
RCK5	UNSP. SMALL REDS ROCKFISH	Other groundfish	Other groundfish	yes
RCK6	UNSP. ROSEFISH ROCKFISH	Other groundfish	Other groundfish	yes
RCK7	UNSP. GOPHER ROCKFISH	Other nearshore rockfish	Other nearshore rockfish	yes
RCK8	CANARY+VERMILION ROCKFISH	Canary rockfish	Canary rockfish	yes
RCK9	BLACK+BLUE ROCKFISH	Other nearshore rockfish	Other nearshore 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	Other shelf 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

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP Groundfish
RSOL	ROCK SOLE	Other flatfish	Other flatfish	yes
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 nearshore rockfish	yes
SCR1	NOM. CALIFORNIA SCORPIONFISH	Other groundfish	Other nearshore rockfish	yes
SDB1	NOM. SPECKLED SANDDAB	Other flatfish	Other flatfish	
SFL1	NOM. STARRY FLOUNDER	Other flatfish	Other flatfish	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	Other slope rockfish	Other slope rockfish	yes
SKCR	SCARLET KING CRAB	Other nongroundfish	Other nongroundfish	
SLGR	SILVERGREY ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SLNS	SLENDER SOLE	Other flatfish	Other flatfish	
SMLT	UNSP. SMELT	Other nongroundfish	Other nongroundfish	
SNOS	SPLITNOSE ROCKFISH	Other slope rockfish	Splitnose rockfish	yes
SNS1	NOM. SPLITNOSE ROCKFISH	Other slope 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	
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 flatfish	Other flatfish	
SSHR	SOUTHERN NEAR-SHORE RF	Other nearshore rockfish	Other nearshore rockfish	yes
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

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP Groundfish
SSP1	NOM. SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	yes
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	Other flatfish	Other flatfish	yes
SUSF	SO. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
SUSP	SO. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	yes
SUSR	SO. UNSP. NEAR-SHORE RF	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	Shortspine thornyhead (60%)	Shortspine thornyhead (60%)	yes
THD1	NOM. THORNYHEADS	Longspine thornyhead (40%)	Longspine thornyhead (40%)	yes
THDS	THORNYHEADS (MIXED)	Shortspine thornyhead (60%)	Shortspine thornyhead (60%)	yes
THDS	THORNYHEADS (MIXED)	Longspine thornyhead (40%)	Longspine thornyhead (40%)	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
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 ROCKFISH	Other groundfish	Other groundfish	yes
UDW1	SHORTRAKER+ROUGHEYE RF	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
UGRN	UNSP. GROUNDFISH	Unspecified grenadiers	Unspecified grenadiers	yes
UHAG	UNSP. HAGFISH	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 Groundfish
UHLB	UNSP. HALIBUT	Other nongroundfish	Other nongroundfish	
UJEL	UNSP. JELLYFISH	Other nongroundfish	Other nongroundfish	
UKCR	UNSP. KING CRAB	Other nongroundfish	Other nongroundfish	
UMCK	UNSP. MACKERAL	Other nongroundfish	Other nongroundfish	
UMSK	UNSP. MOLLUSKS	Other nongroundfish	Other nongroundfish	
UPLG	UNSP. PELAGIC ROCKFISH	Other groundfish	Other groundfish	yes
UPOP	UNSP. POP GROUP	Pacific ocean perch	Other slope rockfish	yes
URCK	UNSP. ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	yes
URCK	UNSP. ROCKFISH	Other slope rockfish (>150 fm)	Other slope 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	UNSP. SCALLOP	Other nongroundfish	Other nongroundfish	
USCU	UNSP. SEA CUCUMBER	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 ROCKFISH	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	UNSP. OYSTER	Other nongroundfish	Other nongroundfish	
UTCR	UNSP. TANNER CRAB	Tanner crab	Tanner crab	
UTNA	UNSP. TUNA	Other nongroundfish	Other nongroundfish	
UTRB	UNSP. TURBOTS	Other flatfish	Other flatfish	yes
UURC	UNSP. SEA URCHIN	Other nongroundfish	Other nongroundfish	
VRM1	NOM. VERMILLION ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
VRML	VERMILLION ROCKFISH	Other shelf rockfish	Other shelf rockfish	yes
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	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

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	FMP Groundfish
YLTL	YELLOWTAIL	Other nongroundfish	Other nongroundfish	
YMTH	YELLOWMOUTH ROCKFISH	Other slope rockfish	Other slope rockfish	yes
YSOL	YELLOWFIN SOLE	Other flatfish	Other flatfish	
YTNA	YELLOWFIN TUNA	Other nongroundfish	Other nongroundfish	
YTR1	NOM. YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish	yes
YTRK	YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish	yes