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NOAA FISHERIES SERVICE

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

NOAA



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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 groundfish fishery along the U.S. west coast. These include: limited entry (LE) sablefish-endorsed fixed gear from April 1, 2009 through October 31, 2009; LE non-sablefish-endorsed fixed gear from January 1, 2009 through April 30, 2010; and open access non-nearshore fixed gear from January 1, 2009 through April 30, 2010. The WCGOP collects at-sea data from LE trawl and fixed gear fisheries, as well as from nearshore, 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.

U.S. West Coast Fixed Gear Groundfish Fishery

There are four major components to the west coast fixed gear groundfish fishery; the LE sablefish-endorsed sector, the LE non-sablefish-endorsed sector, the federal open access sector, and the state-permitted nearshore fisheries. This report includes three of the four sectors; the state-permitted nearshore fisheries, which generally occur in depths of less than 50 fathoms, are reported separately in the report "Data Report and Summary Analyses of the U.S. West Coast Nearshore Fixed Gear Groundfish Fishery" (NWFSC 2009a). Up until 2008, 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 in the commercial groundfish fleet, the WCGOP is now reporting all non-nearshore fixed gear sectors in one report.

Regulations for the three sectors of the west coast fixed gear groundfish 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 use of trip limits by fishery management has been to maintain year-round fishing, processing, and marketing opportunities. Since the 1980's, regulations have evolved to further separate individual groundfish species for management purposes and led to the current use of cumulative two-month trip limits for most species (PFMC 2008). Cumulative trip limits are a specified weight of fish that can be landed during a particular time period.

The limited entry fixed gear fishery requires a federal groundfish permit to participate. There were 227 LE fixed gear permits in 2009. 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 227 LE fixed gear permits in 2009, 164 had sablefish-endorsements. Of these, 132 were associated with longline gear, 32 were associated with pot/trap gear, and 4 were associated with both longline and pot/trap gear. The remaining 63 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.

Limited Entry Sablefish-Endorsed Fixed Gear

Vessels participating in the LE sablefish-endorsed sector 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 sector 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 regulations prohibit landing is discarded at-sea. In addition to market and regulatory discard, smaller fish might 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 could be caught during the primary fishery. In the 2009 season, these shares were translated into tier limits of 61,296 pounds for Tier 1, 27,862 pounds for Tier 2, and 15,921 pounds for Tier 3 (71 FR 78638). Of the 164 sablefish-endorsed permits in 2009, 28 were assigned to Tier 1, 42 to Tier 2, and 94 to Tier 3. In the 2010 season, share were translated into tier limits of 56,081 pounds for Tier 1, 25,492 pounds for Tier 2, and 14,567 pounds for Tier 3 (71 FR 78638).

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 2009 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 105,079 pounds of sablefish during the primary fishery (Tier 1 + Tier 2 + Tier 3 = 61,296 + 27,862 + 15,921 lbs). However, permit stacking does not convey additive landing limits for any other species.

LE sablefish-endorsed primary season fishing currently takes place over a seven-month period from April 1 to October 31. The seven-month season was first implemented in 2002. Permit holders 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 under daily/weekly trip limits 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 primary season. Vessels with observer coverage during the LE sablefish-endorsed fishery that meet their tier quota are no longer covered when they begin fishing in the LE non-sablefish-endorsed fishery under daily/weekly trip limits.

Limited Entry Non-Sablefish-Endorsed Fixed Gear

The LE non-sablefish-endorsed fixed gear sector operates primarily out of southern California ports, with the largest landings occurring in Newport Beach and Oceanside, California. 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 sector 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. 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 might 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 2009, daily landing limits ranged from 300 to 500 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 to 3,000 pounds depending on the area. Landings made under either of these options were also capped by a two-month cumulative limit ranging from 5,000 to 7,000 pounds depending on area and time period. 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 depending on area.

Open Access Fixed Gear

As the open access sector of the fixed gear groundfish 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 2009, daily landing limits were 300 to 400 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 800 to 2,500 pounds depending on area. Landings made under either of these options were also capped by a two-month cumulative limits that ranged from 2,400 to 8,000 pounds depending on area and time period. 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 50 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 and yelloweye rockfish was prohibited in all areas. Landing cowcod was prohibited in the area south of 40° 10' N. latitude.

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 U.S. 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 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 sector, the data in this report (April-October 2009) were collected during the selection cycle from January 1, 2007 through December 31, 2009 (selection cycle 3) and April 1, 2010 through October 31, 2010 (selection cycle 4). The selection process for cycle 4 in 2010 was changed so that 25% of the vessels meeting the selection criteria were randomly selected from each port group for coverage from April 1, 2010 to October 31, 2010. For the non-sablefish-endorsed sector, the data in this report (Jan 2009-April 2010) were collected during two selection cycles, January 1, 2009 through December 31, 2009 (selection cycle 5) and January 1, 2010 through December 31, 2010 (selection cycle 6).

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 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 might 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 89,158 pounds of sablefish in 2009. If only the Tier 1 permit was selected for observer coverage, it would still be necessary to observe all primary season landings, up to 89,158 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 2008. Following the primary sablefish season, the Tier 2 permit might remain on the same vessel or might be transferred to another vessel for the 2009 fishery. In either case, it might be selected for coverage in 2009, 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. During 2009, the majority of permit transfers occurred before any fishing had occurred against the permit, and thus most permits were transferred with zero cumulative pounds of sablefish. 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.

Open Access Fixed Gear 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 sector 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 sector, the data in this report (Jan 2009- April 2010) were collected in two selection cycles, January 1, 2009 through December 31, 2009 (selection cycle 3) and January 1, 2010 through December 31, 2010 (selection cycle 4).

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 2007 or 2008 of at least 5,000 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 123 open access fixed gear vessels that were eligible for selection by the observer program in 2009. 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 Permit Selection” section.

Coverage of Fixed Gear Sectors

LE sablefish-endorsed vessels are selected for all trips during their primary sablefish season while fishing for tier quota sablefish. 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 sectors, vessels are selected for a two-month period.

Some vessels whose permits are selected for a specific period might not be covered by an observer during that period or might not be covered on all trips during that period. A single trip might 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 might 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 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 2009b).

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 (NWFSC 2009b).

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 2009b).
2. Data are entered into a secure database system. A 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 regularly (bi-annually or annually) 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 groundfish 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:

$$A_{mtk} = \frac{x_{mtk}}{\sum_k x_{mtk}}$$

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:

$$B_{mk} = \frac{\sum_k \sum_s x_{mks}}{\sum_t \sum_k \sum_s x_{mks}}$$

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

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 sectors were calculated as the proportion of fleet-wide sablefish landings observed. Overall, sablefish is the largest component of the catch in the limited entry sablefish-endorsed and open access fixed gear sectors. The LE non-sablefish-endorsed sector also includes a large component of shortspine thornyhead and blackgill rockfish 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 (Bellman et al. 2009), observer coverage rates in this report were calculated using the same denominator (sablefish landings) to provide consistency across all fixed gear sectors. Coverage rates were computed based on the complete dataset for 2009 and January through April of 2010.

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).

Once these steps had been applied, the ratio estimator technique (Cochran 1977) was used to estimate discard rates for each major species or species group. Rates were calculated for all of the stocks currently managed under rebuilding plans, as well as stocks for which discard is estimated annually on a fleet-wide basis. Bycatch and discard information for prohibited and protected resources such as Pacific halibut, salmon, green sturgeon, marine mammals, seabirds, and sea turtles are provided in separate reports, which are available electronically at www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/index.cfm. The ratio estimates (R_i) were calculated by area (i):

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

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 (north of 40°10' N. latitude, 40°10' to 36° N. latitude, and south of 36° N. latitude). 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 (Bellman et al. 2009). 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, and vessels, and the observed and total fleet-wide sablefish landings in the LE sablefish-endorsed, LE non-sablefish-endorsed, and open access fixed gear groundfish sectors 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, gear type, fishery management area, and for the entire U.S. west coast with all gears combined. Landings (mt) in all three sectors increased in 2009 relative to 2008; LE sablefish-endorsed (1889; 1475 in 2008), LE non-sablefish-endorsed (296; 149 in 2008), open access fixed gear (938; 580 in 2008) (Table 1a-c).

Coastwide observer coverage in the LE sablefish-endorsed sector decreased in 2009 to 9%, compared with 40% in 2008 (NWFSC 2009c). This decline is primarily driven by the previously described complications in selection of permits in this fishery and the fact that the calendar year 2009 primary season was the last of selection cycle 3 (January 1, 2007 through December 31, 2009). The practice of reviewing coverage in this sector on an annual basis is inconsistent with the sampling/selection framework used by the program until changes were implemented in 2010. If observer coverage is calculated using the sampling/selection cycle time period from 2007 through 2009, the annual average coverage level is 24% and total coverage for the selection cycle is 23% in the LE sablefish-endorsed sector coastwide.

However, observer coverage by groundfish management area provides a more detailed depiction of rates. The decline in observer coverage north of 40°10' N. latitude during 2009 was primarily associated with a decline in coverage in the combined port groups of Astoria, Newport, and Coos Bay, Oregon. Among the northern ports, the combined port groups of Bellingham and Neah Bay received the highest level of observer coverage in 2009 (17%).

South of 40°10' N. latitude, observer coverage increased considerably in 2009 from 2 to 20%, with total fleet landings of sablefish also increasing during this time from 131 to 190 mt. The majority of these southern landings occurred in the combined port groups of Fort Bragg, San Francisco, and Monterey, which received a 32% observer coverage rate. There was no observer coverage in the Eureka or Morro Bay port groups.

Observer coverage in the LE non-sablefish-endorsed sector in 2009 also decreased relative to 2008 from 7% to 4% on a coastwide basis (NWFSC 2009c). Table 1b provides coverage rates for both the 2009 calendar year and January through April of 2010. In the calendar year of 2009, coverage was highest in the San Francisco port group, where 23% of sablefish landings were observed. Although the Monterey and Morro Bay port groups contributed the largest portion of the landings for this sector, only 2% of the sablefish landings in those ports were observed. Landings are also relatively large in the Los Angeles port group, which received a 5% observer coverage rate in 2009.

Observer coverage in the open access fixed gear sector in 2009 was 3% coastwide. On a coastwide basis, observer coverage of this sector decreased slightly from 2008 (4%) to 2009. Coverage of the open access sector was highest in the Astoria port group in 2009, but overall rates ranged from 1 to 8% by port group.

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 U.S. west coast in each fixed gear sector. Overall, the majority of observed trips in the LE sablefish-endorsed sector occurred in Washington and northern California. Landings in this sector, however, were greatest in Oregon port groups, where observer coverage declined in 2009. The majority of landings in the LE non-sablefish-endorsed sector were focused along the central and southern California coast. Los Angeles had the largest number of observed trips (94) in this sector, while there were 18 observed trips in the Santa Barbara, and 9 trips in the combined port groups of Monterey and Morro Bay. In the open access fixed gear sector, landings are distributed along the entire coast with larger landings in the southern most ports. Observers covered between 5 to 17 trips in most port groups with landings. There were 16 observed trips in the combined port groups of Morro Bay, Santa Barbara, and Los Angeles, which contributed about 46% of the sablefish landings in this sector.

In 2009, spatial closures were employed in the non-nearshore fixed gear fishery 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 45° 03.83' N. latitude, from 30 to 125 fm in the area between 45° 03.83' and 43° N. latitude, from 20 to 100 fm in the area between 43° and 40°10' N. latitude, from 30 to 150 fm in the area between 40°10' and 34°27' N. latitude, and from 60 to 150 fm in the area south of 34°27' N. latitude. These restrictions applied to both the limited entry and open access components of the fishery.

The WCGOP controls only the selection of permits for coverage. Fishing activity of selected vessels is not always predictable which could increase variance in the percentage of landings or the number of trips actually observed. As a result, coverage levels vary from year to year depending on which permits were selected.

Observed Total Catch, Discard Ratios, and Bycatch Ratios

Table 2 presents the observed total catch weight (mt), discard weight (mt) and percent discarded by gear type for the LE sablefish-endorsed sector in 2009 and from January through April of 2010. Observed coastwide total catch (discarded + retained) in this fishery was largely comprised of sablefish, followed by Pacific halibut, slope rockfish, spiny dogfish, longnose skate, arrowtooth flounder, and lingcod. Of the rebuilding species, darkblotched rockfish, yelloweye rockfish, and Pacific ocean perch were caught in the largest amounts using longline gear. Canary rockfish, bocaccio, and widow rockfish were also caught in small amounts with longline gear. Coastwide, the only rebuilding groundfish species caught using pot gear were darkblotched rockfish and Pacific ocean perch.

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. Although the variety and quantity of bycatch species caught using pot gear was less than that of longline, larger amounts of discarded sablefish and lingcod were observed with pot gear. Overall, Pacific halibut constituted the largest component of observed discard coastwide. This was primarily attributed to longline vessels, which discarded a total of 30 mt while observed. Observed total catch and discard of Pacific halibut in the 2009 groundfish fixed gear fishery was used to inform subsequent estimates of fleet-wide Pacific halibut bycatch. The fleet-wide analysis is presented in a separate report (Heery et al. 2010). Relatively large amounts of sablefish, spiny dogfish, longnose skate, arrowtooth flounder, and lingcod were also discarded.

Table 3 presents the observed total catch weight (mt), discard weight (mt) and percent discarded for the LE non-sablefish-endorsed fixed gear sector in 2009 and from January through April of 2010. Observed coastwide total catch (discarded + retained) in the LE non-sablefish-endorsed sector is largely comprised of thornyheads and sablefish, followed by unspecified sharks and longnose skate. Proportionally to other species, the observed catch of thornyhead species in 2009 was consistent with that observed during 2008 in this sector. Of the rebuilding species, only darkblotched rockfish was caught in the LE non-sablefish-endorsed sector.

Table 4 presents the observed total catch weight (mt), discard weight (mt) and percent discarded for the open access fixed gear sector by gear group. Separate catch summaries are provided for the calendar year of 2009 and from January through April of 2010. Observed total catch (discarded + retained) in this sector was largely comprised of sablefish, followed by slope rockfish, spiny dogfish, longnose skate, and Pacific halibut. Of the rebuilding species, darkblotched rockfish was caught in the largest amounts, followed by yelloweye rockfish and Pacific ocean perch. Very small amounts of canary rockfish and bocaccio were also observed on open access vessels using hook-and-line gears.

Tables 5 through 8 present discard ratios and standard errors for the various sectors of the non-nearshore fixed gear fishery by area, sector and gear group. Discard ratios are computed in order to inform subsequent estimates of total fishing mortality in the 2009 non-nearshore fixed gear fishery. As such, they are presented in a format consistent with total mortality methodology, which employs two latitudinal breaks at 40° 10' and 36° N. latitude. Although there were not sufficient data to provide separate LE sablefish-endorsed discard ratios by latitude (Table 5), ratios for the LE non-sablefish-endorsed and OA fixed gear sectors are separated into three distinct latitudinal strata: (1) north of 40° 10' N. latitude, (2) 40° 10' to 36° N. latitude, and (3) south of 36° N. latitude. In order to ensure sufficient sample sizes in each latitudinal stratum, observer data must often be combined across sector. This is reflected in Tables 6-8, as rates are provided for individual sectors and gear groups, and for combined sectors when necessary.

Table 5 presents 2009 discard ratios and standard errors for the LE sablefish-endorsed sector north of 36° N. latitude by gear group. Species are grouped for ratio calculations according to Appendix C. All discard ratios in the area north of 36° N. latitude were computed using retained sablefish in the denominator. Relative to 2008, LE sablefish-endorsed discard ratios associated with longline gear decreased for several species, including sablefish, arrowtooth flounder, and slope rockfish. The discard ratio for spiny dogfish remained relatively consistent. Among observed LE sablefish-endorsed vessels fishing with pot gear, the discard ratio for lingcod increased, while sablefish changed very little (NWFSC 2009c).

Table 6 presents discard ratios and standard errors for the OA fixed gear and LE non-sablefish-endorsed sectors north of 40° 10' N. latitude. There were not sufficient data to report separate discard rates for the LE non-sablefish-endorsed sector in this area. LE non-sablefish-endorsed observer data were therefore grouped with data from the OA fixed gear sector to produce discard ratios in the far right-hand columns. All discard ratios in the area north of 40° 10' N. latitude were computed using retained sablefish in the denominator, and species were again grouped according to Appendix C. Observer discard ratios were generally higher for hook-and-line gears than for pot gear. Relative to 2008, OA fixed gear discard ratios for hook-and-line gears decreased for several species, including sablefish, spiny dogfish, and longnose skate, but increased for arrowtooth flounder (NWFSC 2009c). Observed OA fixed gear vessels fishing with pot gear exhibited a lower discard rate for arrowtooth flounder, sablefish, and lingcod in 2009 relative to 2008 (NWFSC 2009c).

Table 7 presents discard ratios and standard errors for the LE non-sablefish-endorsed and OA fixed gear sectors between 40°10' and 36° N. latitude. There were not sufficient data in this area to report ratios for the OA fixed gear sector fishing with hook-and-line gears. Therefore, combined hook-and-line gear ratios are provided from the LE non-sablefish-endorsed sector and the OA fixed gear sector. Again, species are grouped according to Appendix C, and discard ratios are computed using retained sablefish in the denominator. Relative to 2008, discard ratios for sablefish in this area increased in the LE non-sablefish-endorsed sector fishing longline gear, and decreased in the OA fixed gear sector fishing pot gear (NWFSC 2009c). A slight increase in the sablefish discard ratio was observed in the combined LE non-sablefish-endorsed sector/OA fixed gear sector fishing hook-and-line gear.

Table 8 presents discard ratios and standard errors for the LE non-sablefish-endorsed and OA fixed gear sectors south of 36° N. latitude. Although sablefish was used as the denominator for discard ratios north of 36° N. latitude, retained catch in the sectors operating south of this line contain a variety of other groundfish species, including thornyheads, blackgill rockfish, and other shelf and slope rockfish species. In order to better represent targeting behavior in this area, discard ratios south of 36° N. latitude were computed using retained FMP groundfish (except Pacific hake) in the denominator. Discard ratios for the LE non-sablefish-endorsed sector for longnose skate and sablefish increased in this area from 2008 to 2009 (NWFSC 2009c). In 2008, there were not sufficient data to report observed discard ratios for the OA fixed gear sector fishing with hook-and-line gears in this area. However, the discard ratios for this sector south of 36° N. latitude are included in Table 8 for 2009, and were highest for longnose skate and sablefish. Discard ratios in the OA sector fishing pot gear were smaller than hook-and-line ratios for all species except sablefish.

Although bycatch ratios are not used in groundfish total mortality estimation, they are important for projection modeling of the non-nearshore fixed gear groundfish fishery that is conducted annually by the Groundfish Management Team (GMT) of the Pacific Fishery Management Council (PFMC). Bycatch ratios for rebuilding groundfish species in the 2009 non-nearshore fixed gear groundfish fishery are presented in Table 9. These are computed as the total catch weight of rebuilding groundfish species divided by the total retained weight of sablefish, and are calculated from 2009 data for all fixed gear groundfish sectors combined. Stratification used in GMT projection models is similar to that in total mortality estimation, with latitudinal breaks at 40° 10' and 36° N. latitude and include separate estimates for each gear type. Bycatch ratios of rebuilding groundfish species across all sectors were highest for darkblotched rockfish in 2009.

Bycatch ratios for rebuilding groundfish species are also represented graphically in Figures 1 and 2. In Figure 1, rebuilding groundfish species bycatch ratios in the LE sablefish-endorsed sector are presented by gear type from all years of observer data to provide perspective on bycatch over time. Bycatch ratios over time in the LE non-sablefish-endorsed sector are presented in Figure 2. A similar figure was not generated for the OA fixed gear sector, as this sector has only received coastwide coverage since 2007. Rebuilding groundfish species bycatch ratios in each sector have generally fluctuated since 2002, and might change due to a number of biological, economic, and regulatory factors. Bycatch ratio trends should not be viewed as analogous to trends in total estimated fishing mortality, which rely on both bycatch and landings information from the fishery.

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 LE and OA fixed gear groundfish sectors, from September 2003 through April 2010, are summarized in Table 10. Although the open access fixed gear sector was observed in California only 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 OA fixed gear sectors 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 groundfish species observed in the LE sablefish-endorsed, LE non-sablefish-endorsed, and OA fixed gear sectors, combined from September 2003 through April 2010. Length frequencies for other non-rebuilding groundfish species are also presented in Figure 5. Distributions are only provided for species for which there were more than 50 observations.

Table 10 includes a summary of the available WCGOP biological data from September 2003 through April 2010. Biological data is only summarized for non-rebuilding groundfish/non-groundfish species with more than 10 observations. For protected fish resources, which are 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. Only two individual salmon specimens were sampled in 2005 and 2007. Information regarding biosampling procedures for marine mammals and seabirds is available in the WCGOP observer training manual (NWFSC 2009b).

Summary

Bycatch and discard rates calculated from observer data collected aboard fixed gear groundfish vessels from January 2009 through April 2010 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 the groundfish fixed gear fishery. The collected biological data will also be available for use by stock assessment authors.

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Figures

Figure 1. Bycatch ratios for rebuilding groundfish species in the limited entry (LE) sablefish-endorsed (primary) sector of the non-nearshore fixed gear groundfish fishery from 2002 through 2009 by gear group. Bycatch ratios were computed as the observed total catch weight of rebuilding groundfish species divided by the weight of retained sablefish.

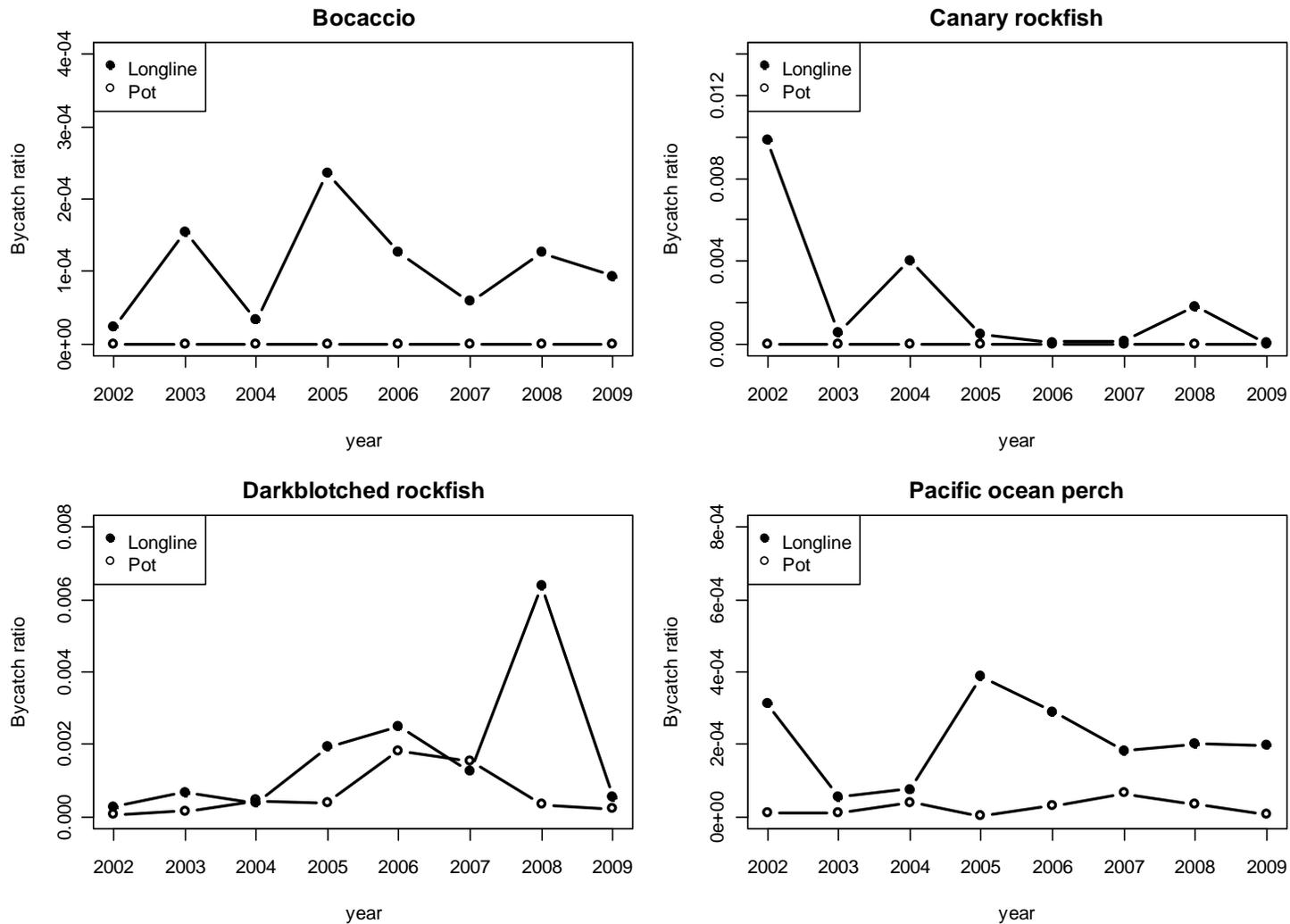


Figure 1 continued. Bycatch ratios for rebuilding groundfish species in the limited entry (LE) sablefish-endorsed (primary) sector of the non-nearshore fixed gear groundfish fishery from 2002 through 2009 by gear group. Bycatch ratios were computed as the observed total catch weight of rebuilding groundfish species divided by the weight of retained sablefish.

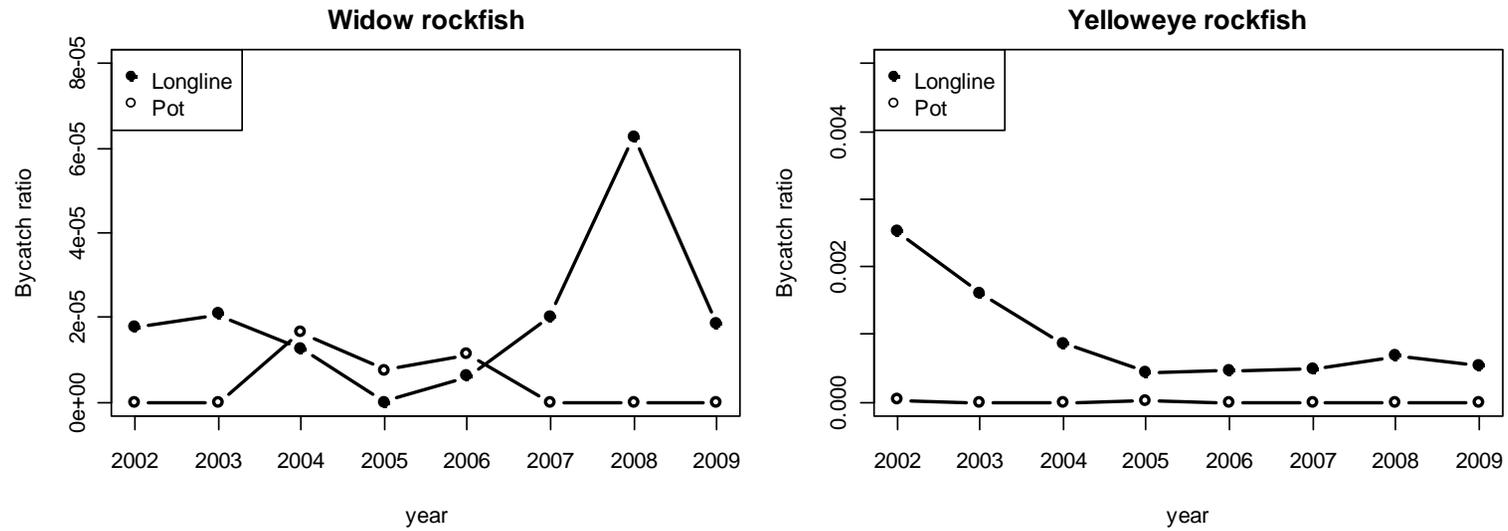


Figure 2. Bycatch ratios for the limited entry (LE) non-sablefish-endorsed sector of the non-nearshore fixed gear groundfish fishery from 2002 through 2009. Bycatch ratios were computed as the observed total catch weight of a rebuilding groundfish species divided by the observed weight of retained FMP groundfish (excluding Pacific hake).

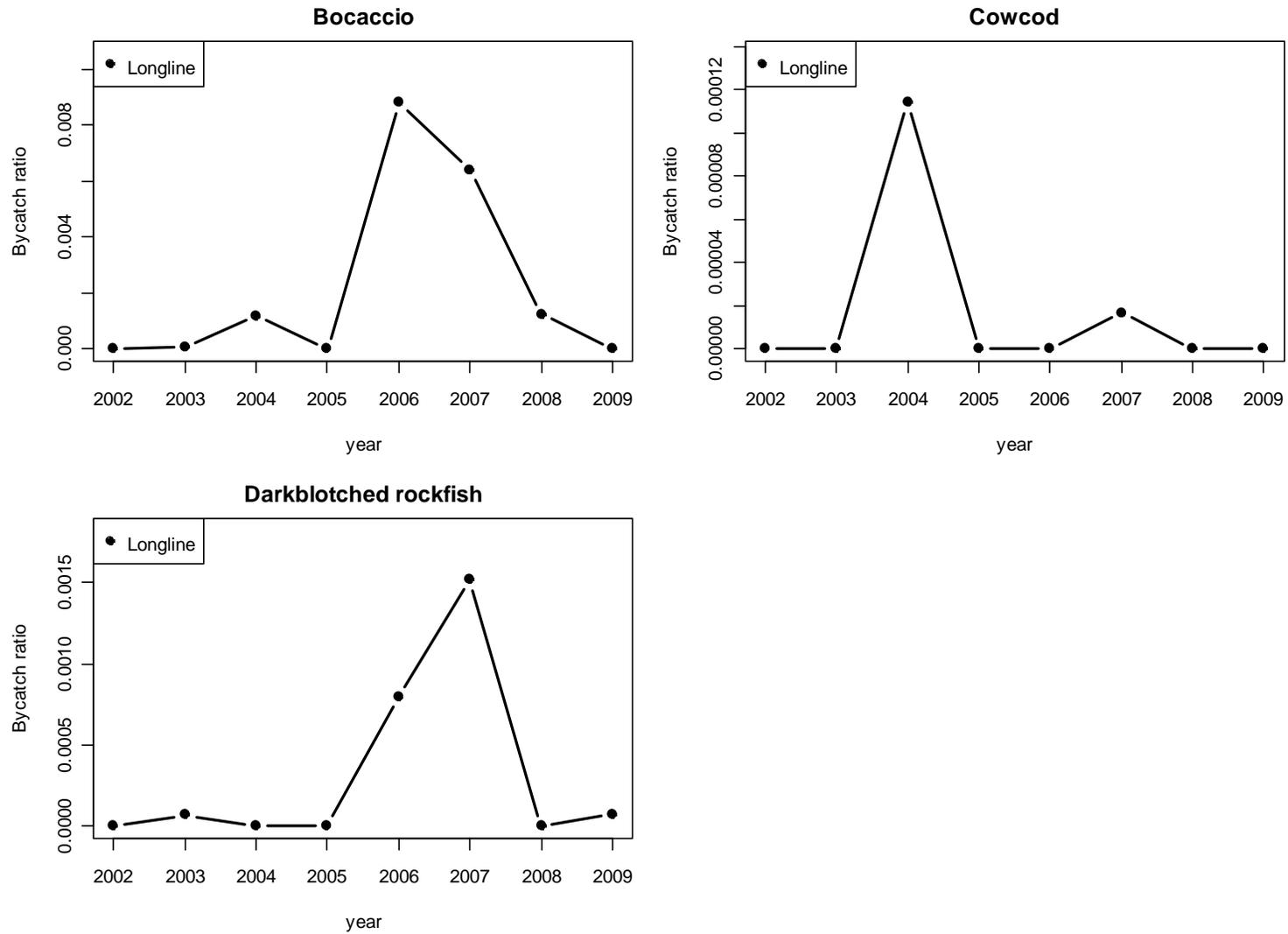


Figure 3. Length frequency distributions of discarded sablefish in the limited entry (LE) sablefish-endorsed sector (above), the LE non-sablefish-endorsed (middle), and open access (OA) fixed gear (below) sectors from September 2003 through April 2010. Length frequencies are presented for longline (black) and pot gear (gray) when applicable.

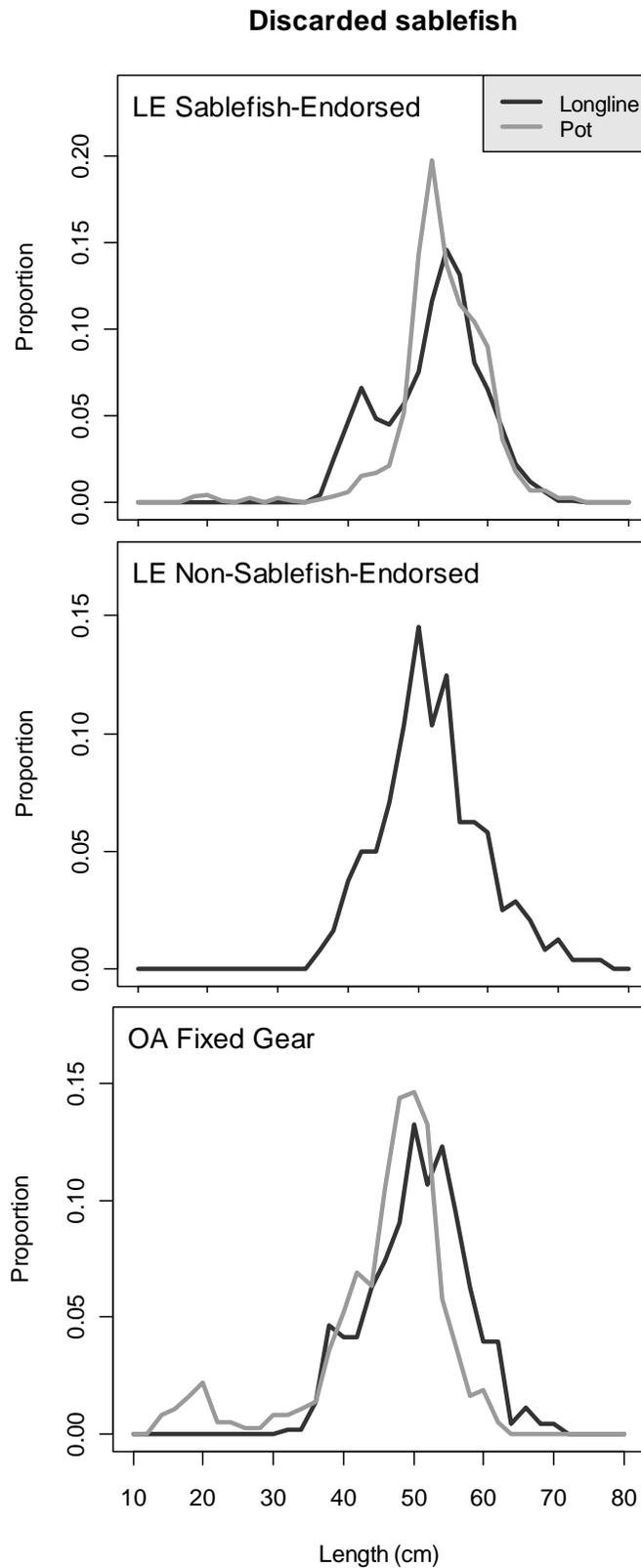


Figure 4. Length frequency distributions of discarded rebuilding groundfish species from September 2003 through April 2010 in the limited entry sablefish-endorsed, limited entry non-sablefish-endorsed, and open access fixed gear sectors. Biological data are combined across all gear types to generate length frequencies and are only provided for rebuilding groundfish species with more than 50 observations.

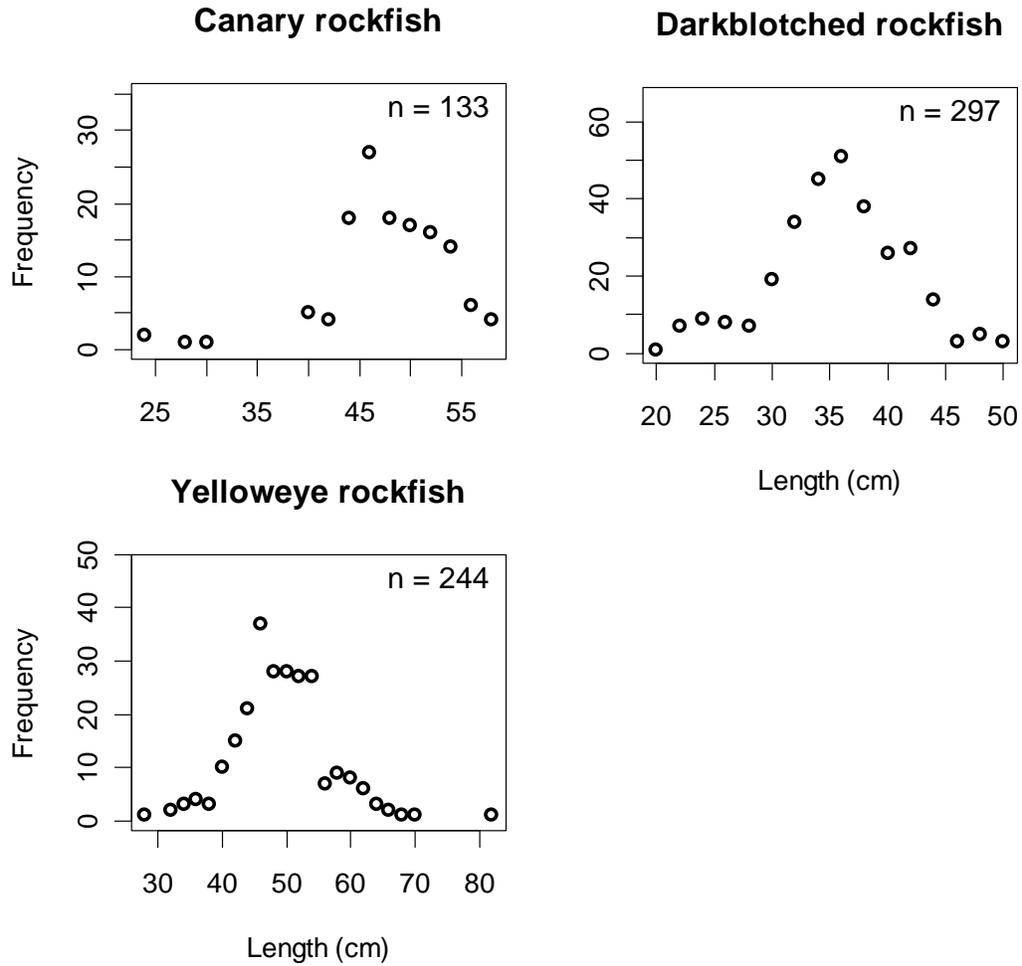


Figure 5. Length frequency distributions of discarded non-rebuilding groundfish species from September 2003 through April 2010 in the limited entry sablefish-endorsed, limited entry non-sablefish-endorsed, and open access fixed gear sectors. Biological data are combined across all gear types to generate length frequencies and are only provided for species with more than 50 observations.

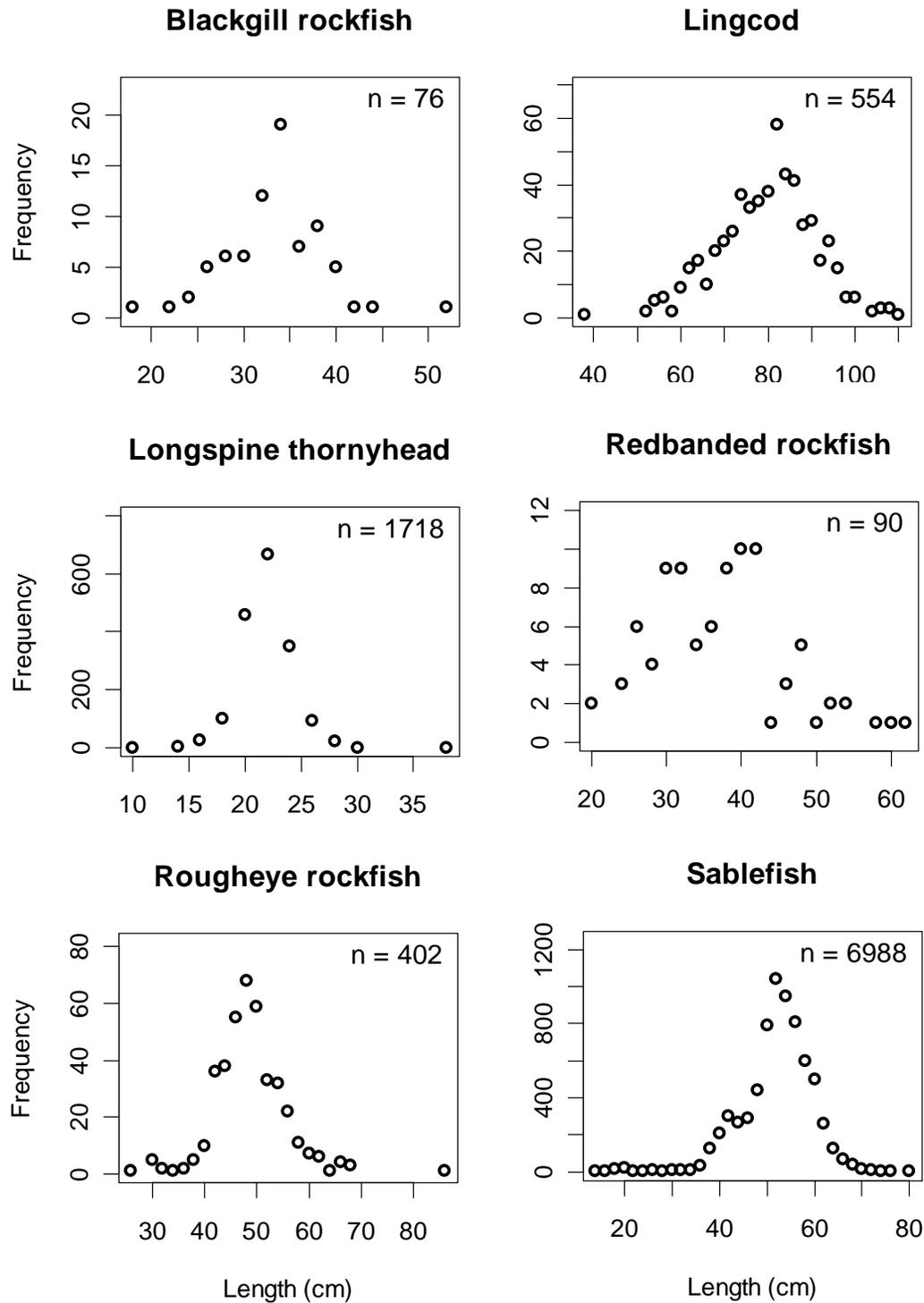
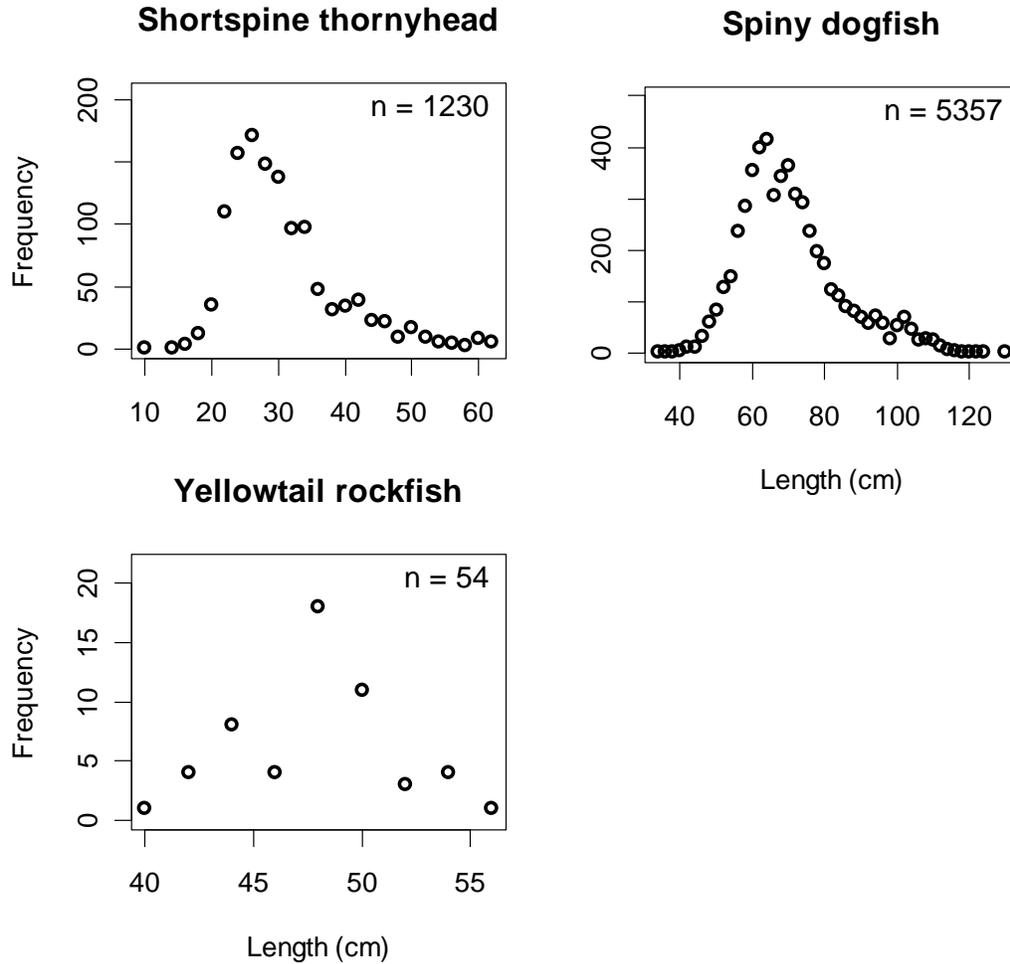


Figure 5 continued. Length frequency distributions of discarded non-rebuilding groundfish species from September 2003 through April 2010 in the limited entry sablefish-endorsed, limited entry non-sablefish-endorsed, and open access fixed gear sectors. Biological data are combined across all gear types to generate length frequencies and are only provided for species with more than 50 observations.



Tables

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

Table 1a. Total trips, sets, vessels and sablefish landings observed in the 2009 limited entry sablefish-endorse sector of the non-nearshore fixed gear groundfish 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) Sector | | | | | |
|-------------|---|---|-------------------------|----------------------------|----------------------------------|-------------------------------------|--|
| | | 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 |
| 2009 | Bellingham Neah Bay | 13 | 210 | 4 | 57.2 | 346.6 | 17% |
| | Astoria Newport Coos Bay | 5 | 41 | 3 | 19.1 | 1075.5 | 2% |
| | Crescent City | 33 | 49 | 3 | 29.3 | 222.2 | 13% |
| | Eureka | -- | -- | -- | -- | 54.3 | -- |
| | Fort Bragg San Francisco Monterey | 22 | 58 | 3 | 59.0 | 186.8 | 32% |
| | Morro Bay | -- | -- | -- | -- | 3.1 | -- |
| | Santa Barbara | -- | -- | -- | -- | -- | -- |
| | Los Angeles | -- | -- | -- | -- | -- | -- |
| | Longline gear | 46 | 291 | 9 | 98.2 | 1401.8 | 7% |
| | Pot gear | 27 | 67 | 3 | 66.5 | 486.8 | 14% |
| | North of 40°10' N | 53 | 314 | 10 | 127.5 | 1698.7 | 8% |
| | South of 40°10' N | 21 | 44 | 3 | 37.2 | 189.9 | 20% |
| | Coastwide total | 73 | 358 | 13 | 164.7 | 1888.6 | 9% |

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 2009 and January through April of 2010 limited entry non-sablefish-endorsed sector of the non-nearshore fixed gear groundfish 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 Sector | | | | | | |
|-----------------------|---|-------------------------|----------------------------|----------------------------------|-------------------------------------|--|-----|
| | 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 | |
| 2009 | Bellingham | -- | -- | -- | -- | -- | |
| | Neah Bay | -- | -- | -- | -- | -- | |
| | Astoria | -- | -- | -- | -- | 0.8 | |
| | Newport | -- | -- | -- | -- | 1.7 | |
| | Coos Bay | 10 | 13 | 4 | 2.0 | 50.1 | 4% |
| | Crescent City | | | | | | |
| | Eureka | | | | | | |
| | Fort Bragg | | | | | | |
| | San Francisco | 7 | 7 | 4 | 3.0 | 13.2 | 23% |
| | Monterey | 9 | 12 | 4 | 3.7 | 173.1 | 2% |
| | Morro Bay | | | | | | |
| | Santa Barbara | 18 | 38 | 4 | 0.2 | 2.0 | 12% |
| | Los Angeles | 94 | 203 | 20 | 3.0 | 55.3 | 5% |
| | Longline gear | 138 | 273 | 34 | 12.0 | 288.0 | 4% |
| | Pot gear | -- | -- | -- | -- | 8.3 | -- |
| | North of 36° N | 22 | 26 | 8 | 6.3 | 117.0 | 5% |
| | South of 36° N | 116 | 247 | 26 | 5.7 | 179.3 | 3% |
| Coastwide total | 138 | 273 | 36 | 12.0 | 296.2 | 4% | |
| Jan - Apr 2010 | Bellingham | -- | -- | -- | -- | -- | |
| | Neah Bay | -- | -- | -- | -- | -- | |
| | Astoria | -- | -- | -- | -- | 0.4 | |
| | Newport | -- | -- | -- | -- | -- | |
| | Coos Bay | -- | -- | -- | -- | 1.2 | |
| | Crescent City | 5 | 5 | 3 | 0.9 | 56.6 | 2% |
| | Eureka | | | | | | |
| | Fort Bragg | | | | | | |
| | San Francisco | | | | | | |
| | Monterey | | | | | | |
| | Morro Bay | | | | | | |
| | Santa Barbara | | | | | | |
| | Los Angeles | 58 | 133 | 7 | 0.7 | 7.4 | 9% |
| | Longline gear | 63 | 138 | 10 | 1.5 | 62.8 | 2% |
| Pot gear | -- | -- | -- | -- | 2.8 | -- | |
| North of 36° N | * | * | * | * | 22.8 | * | |
| South of 36° N | 61 | 136 | 9 | 1.3 | 42.9 | 3% | |
| Coastwide total | 63 | 138 | 10 | 1.5 | 65.7 | 2% | |

* Not reported due to confidentiality.

Note: The number of trips and vessels north and south of 36° 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 2009 and January through April of 2010 open access fixed gear sector of the non-nearshore fixed gear groundfish 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 |
| 2009 | Bellingham | -- | -- | -- | -- | -- | -- |
| | Neah Bay | -- | -- | -- | -- | 15.8 | -- |
| | Astoria | 16 | 41 | 7 | 4.2 | 55.5 | 8% |
| | Newport | -- | -- | -- | -- | 25.6 | -- |
| | Coos Bay | 15 | 15 | 6 | 4.0 | 69.8 | 6% |
| | Crescent City | 15 | 16 | 8 | 3.5 | 110.2 | 3% |
| | Eureka | 9 | 11 | 5 | 2.5 | 55.2 | 5% |
| | Fort Bragg | 17 | 18 | 11 | 4.8 | 101.9 | 5% |
| | San Francisco | -- | -- | -- | -- | 25.2 | -- |
| | Monterey | 5 | 5 | 3 | 1.0 | 47.3 | 2% |
| | Morro Bay | 16 | 42 | 8 | 5.8 | 431.7 | 1% |
| | Santa Barbara | | | | | | |
| | Los Angeles | | | | | | |
| | Hook-and-line gear | 68 | 103 | 33 | 17.2 | 580.4 | 3% |
| | Pot gear | 30 | 45 | 18 | 8.5 | 357.9 | 2% |
| | North of 40°10' N | 55 | 83 | 26 | 14.2 | 332.1 | 4% |
| 40°10' N to 36° N | 22 | 23 | 14 | 5.8 | 174.4 | 3% | |
| South of 36° N | 16 | 42 | 8 | 5.8 | 431.7 | 1% | |
| Coastwide total | 93 | 148 | 48 | 25.7 | 938.2 | 3% | |
| Jan - Apr 2010 | Bellingham | -- | -- | -- | -- | -- | -- |
| | Neah Bay | -- | -- | -- | -- | 1.7 | -- |
| | Astoria | -- | -- | -- | -- | 2.5 | -- |
| | Newport | 8 | 12 | 3 | 1.7 | 29.8 | 6% |
| | Coos Bay | | | | | | |
| | Crescent City | | | | | | |
| | Eureka | -- | -- | -- | -- | 8.8 | -- |
| | Fort Bragg | 3 | 3 | 3 | 0.6 | 20.2 | 3% |
| | San Francisco | | | | | | |
| | Monterey | -- | -- | -- | -- | 10.3 | -- |
| | Morro Bay | 6 | 12 | 5 | 3.3 | 156.4 | 2% |
| | Santa Barbara | | | | | | |
| | Los Angeles | -- | -- | -- | -- | 0.5 | -- |
| | Hook-and-line gear | 11 | 15 | 6 | 3.2 | 146.4 | 2% |
| | Pot gear | 6 | 12 | 5 | 2.4 | 83.8 | 3% |
| | North of 40°10' N | 8 | 12 | 3 | 1.7 | 42.9 | 4% |
| 40°10' N to 36° N | 3 | 3 | 3 | 0.6 | 30.5 | 2% | |
| South of 36° N | 6 | 12 | 5 | 3.3 | 156.9 | 2% | |
| Coastwide total | 17 | 27 | 11 | 5.6 | 230.2 | 2% | |

Note: The number of trips and vessels by area do not sum to coastwide totals because some vessels fish in separate areas on the same trip. Also, any sets that are lacking spatial information are included in coastwide and port group totals only.

Table 2. Summary of fishing effort, total catch weight (mt), discard weight (mt) and percent discarded from observed limited entry sablefish-endorsed (primary) vessels by gear type in 2009 and for combined gears from January through April of 2010. Gears were combined for the first four months of 2010 to ensure confidentiality. Effort is summarized from observed vessels in terms of retained sablefish (mt), retained FMP groundfish (excluding Pacific hake), the number of trips, the number of sets, and the number of hooks or pots across sets.

| Limited Entry Sablefish-Endorsed (Primary) Sector | 2009 | | | | | | Jan - Apr 2010 | | | | | |
|--|-------------------|----------------|------------------|-------------------|----------------|------------------|-------------------|----------------|------------------|-------------------|----------------|------------------|
| | Longline | | | Pot | | | Longline | | | Pot | | |
| <u>Summary of effort</u> | | | | | | | | | | | | |
| Retained sablefish (mt) | 98.2 | | | 66.5 | | | 54.7 | | | 54.8 | | |
| Retained groundfish (mt) | 110.0 | | | 67.1 | | | 58.5 | | | 54.8 | | |
| # of trips | 46 | | | 27 | | | 23 | | | 4 | | |
| # of sets | 287 | | | 67 | | | 131 | | | 98 | | |
| # of hooks/pots | 649327 | | | 3883 | | | 265600 | | | 3397 | | |
| <u>Summary of catch and discard</u> | | | | | | | | | | | | |
| | Total | Discard | Total % |
| | catch (mt) | (mt) | discarded |
| Rebuilding species | | | | | | | | | | | | |
| Bocaccio | 0.009 | -- | 0.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Canary rockfish | 0.002 | 0.002 | 100.0% | -- | -- | -- | 0.005 | 0.005 | 100.0% | -- | -- | -- |
| Darkblotched rockfish | 0.052 | -- | 0.0% | 0.014 | 0.009 | 67.6% | 0.263 | 0.007 | 2.8% | 0.003 | -- | 0.0% |
| Pacific ocean perch | 0.019 | 0.003 | 14.0% | 0.001 | 0.001 | 100.0% | 0.015 | 0.000 | 0.0% | -- | -- | -- |
| Widow rockfish | 0.002 | -- | 0.0% | -- | -- | -- | 0.003 | 0.003 | 100.0% | -- | -- | -- |
| Yelloweye rockfish | 0.053 | 0.053 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Non-rebuilding species | | | | | | | | | | | | |
| Arrowtooth flounder | 3.678 | 3.517 | 95.6% | 0.040 | 0.040 | 100.0% | 1.331 | 1.119 | 84.0% | 0.252 | 0.047 | 18.7% |
| Big skate | 0.481 | 0.406 | 84.4% | -- | -- | -- | 0.027 | -- | 0.0% | -- | -- | -- |
| California skate | 0.002 | 0.002 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chilipepper rockfish | 0.163 | -- | 0.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dover sole | 0.203 | 0.130 | 64.3% | 0.108 | 0.108 | 100.0% | 0.043 | 0.027 | 63.3% | 0.109 | 0.109 | 100.0% |
| Flatfish | 0.010 | 0.010 | 100.0% | -- | -- | -- | -- | -- | -- | 0.001 | 0.001 | 100.0% |
| Deepsea sole | | 0.000 | | | -- | | | -- | | | 0.001 | |
| Greenland turbot | | 0.009 | | | -- | | | -- | | | -- | |
| Greenspotted rockfish | 0.003 | 0.003 | 100.0% | 0.002 | 0.002 | 100.0% | -- | -- | -- | -- | -- | -- |
| Greenstriped rockfish | 0.058 | 0.044 | 76.6% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Grenadier | 1.952 | 1.236 | 63.3% | -- | -- | -- | 0.137 | 0.057 | 41.7% | 0.280 | 0.100 | 35.9% |
| Pacific grenadier | | 1.157 | | | -- | | | 0.055 | | | 0.100 | |
| Unspecified grenadier | | 0.079 | | | -- | | | 0.002 | | | -- | |

Table 2 continued.

| Limited Entry Sablefish-Endorsed (Primary) Sector | 2009 | | | | | | Jan - Apr 2010 | | | | | |
|--|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|
| | Longline | | | Pot | | | Longline | | | Pot | | |
| | Total catch (mt) | Discard (mt) | Total % discarded |
| Non-rebuilding species (cont.) | | | | | | | | | | | | |
| Lingcod | 1.297 | 0.669 | 51.6% | 1.929 | 1.557 | 80.7% | 0.537 | 0.537 | 100.0% | 0.913 | 0.913 | 100.0% |
| Longnose skate | 6.360 | 5.378 | 84.6% | -- | -- | -- | 3.965 | 3.273 | 82.5% | -- | -- | -- |
| Pacific flatnose | 0.083 | 0.083 | 100.0% | -- | -- | -- | 0.001 | 0.001 | 100.0% | 0.001 | -- | 0.0% |
| Pacific cod | 0.436 | 0.021 | 4.9% | -- | -- | -- | 0.004 | -- | 0.0% | -- | -- | -- |
| Pacific hake | 0.008 | 0.008 | 100.0% | -- | -- | -- | 0.009 | 0.009 | 100.0% | -- | -- | -- |
| Petrale sole | 0.005 | -- | 0.0% | -- | -- | -- | -- | -- | -- | 0.001 | 0.001 | 100.0% |
| Sablefish | 102.753 | 4.533 | 4.4% | 84.697 | 18.220 | 21.5% | 68.032 | 13.365 | 19.6% | 56.998 | 2.247 | 3.9% |
| Shelf rockfish | 0.189 | 0.026 | 13.7% | 0.002 | 0.000 | 4.3% | 0.014 | 0.003 | 21.0% | -- | -- | -- |
| Redstripe rockfish | | -- | | | -- | | | -- | | | -- | |
| Rosethorn rockfish | | 0.026 | | | -- | | | 0.002 | | | -- | |
| Silvergray rockfish | | -- | | | -- | | | -- | | | -- | |
| Stripetail rockfish | | -- | | | 0.000 | | | -- | | | -- | |
| Tiger rockfish | | -- | | | -- | | | -- | | | -- | |
| Vermilion rockfish | | -- | | | -- | | | -- | | | -- | |
| Unspecified shelf rockfish | | -- | | | -- | | | 0.001 | | | -- | |
| Skates | 1.191 | 0.173 | 14.5% | 0.000 | 0.000 | 100.0% | 0.335 | 0.074 | 22.1% | -- | -- | -- |
| Aleutian skate | | -- | | | -- | | | 0.030 | | | -- | |
| Black skate | | 0.085 | | | -- | | | -- | | | -- | |
| Sandpaper skate | | 0.077 | | | 0.000 | | | 0.044 | | | -- | |
| Unspecified skate | | 0.011 | | | -- | | | -- | | | -- | |
| Slope rockfish | 12.872 | 0.162 | 1.3% | 0.685 | 0.126 | 18.4% | 3.933 | 0.116 | 2.9% | 0.050 | 0.000 | 0.0% |
| Aurora rockfish | | 0.001 | | | 0.000 | | | 0.000 | | | -- | |
| Blackgill rockfish | | -- | | | 0.004 | | | 0.068 | | | -- | |
| Redbanded rockfish | | 0.029 | | | 0.111 | | | 0.012 | | | -- | |
| Rougheye rockfish | | 0.009 | | | 0.010 | | | 0.005 | | | -- | |
| Sharpchin rockfish | | -- | | | -- | | | -- | | | -- | |
| Shortraker rockfish | | 0.094 | | | -- | | | -- | | | -- | |
| Shortraker/Rougheye rockfish | | 0.022 | | | -- | | | 0.016 | | | -- | |

Table 2 continued.

| Limited Entry Sablefish-Endorsed (Primary) Sector | 2009 | | | | | | Jan - Apr 2010 | | | | | |
|--|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|
| | Longline | | | Pot | | | Longline | | | Pot | | |
| | Total catch (mt) | Discard (mt) | Total % discarded |
| Non-rebuilding species (cont.) | | | | | | | | | | | | |
| Slope rockfish (cont.) | | | | | | | | | | | | |
| Splitnose rockfish | | 0.002 | | | 0.001 | | | 0.001 | | | -- | |
| Yellowmouth rockfish | | 0.003 | | | -- | | | -- | | | -- | |
| Unspecified slope rockfish | | 0.000 | | | 0.000 | | | 0.013 | | | -- | |
| Spiny dogfish | 9.116 | 9.116 | 100.0% | 0.113 | 0.113 | 100.0% | 1.504 | 1.504 | 100.0% | 0.031 | 0.031 | 100.0% |
| Spotted ratfish | 0.169 | 0.169 | 100.0% | 0.001 | 0.001 | 100.0% | 0.059 | 0.059 | 100.0% | -- | -- | -- |
| Starry flounder | -- | -- | -- | -- | -- | -- | 0.008 | 0.008 | 100.0% | -- | -- | -- |
| Thornyheads | 1.767 | 0.107 | 6.1% | 0.039 | 0.002 | 3.9% | 0.613 | 0.074 | 12.0% | 0.044 | 0.007 | 14.7% |
| Longspine thornyhead | | 0.009 | | | 0.001 | | | 0.001 | | | 0.005 | |
| Shortspine thornyhead | | 0.098 | | | 0.000 | | | 0.072 | | | 0.002 | |
| Mixed thornyhead | | -- | | | -- | | | 0.001 | | | -- | |
| Yellowtail rockfish | 0.004 | 0.002 | 37.2% | -- | -- | -- | 0.012 | 0.001 | 7.5% | -- | -- | -- |
| Non-groundfish species | | | | | | | | | | | | |
| Bivalves (unidentified) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.000 | 0.000 | 100.0% |
| Blue shark | 2.112 | 2.112 | 100.0% | -- | -- | -- | 0.007 | 0.007 | 100.0% | -- | -- | -- |
| Brown box crab | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.001 | 0.001 | 100.0% |
| Brown cat shark | 0.049 | 0.049 | 100.0% | -- | -- | -- | 0.070 | 0.070 | 100.0% | -- | -- | -- |
| California slickhead | 0.013 | 0.013 | 100.0% | -- | -- | -- | 0.020 | 0.020 | 100.0% | -- | -- | -- |
| Crab (unidentified) | 0.002 | 0.002 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Decorator/spider crab (unidentified) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.000 | 0.000 | 100.0% |
| Dungeness crab | -- | -- | -- | 0.001 | 0.001 | 100.0% | 0.001 | 0.001 | 100.0% | 0.082 | 0.082 | 100.0% |
| Eelpout (unidentified) | 0.000 | 0.000 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Filetail cat shark | 0.019 | 0.019 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Giant grenadier | 1.127 | 1.127 | 100.0% | -- | -- | -- | -- | -- | -- | 0.004 | -- | 0.0% |
| Giant wrymouth | 0.004 | 0.004 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Hagfish (unidentified) | 0.013 | 0.013 | 100.0% | -- | -- | -- | 0.002 | 0.002 | 100.0% | 0.014 | 0.014 | 100.0% |
| Hair crab | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.001 | 0.001 | 100.0% |
| Hermit crab (unidentified) | -- | -- | -- | 0.000 | 0.000 | 100.0% | -- | -- | -- | 0.001 | 0.001 | 100.0% |
| Jellyfish (unidentified) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.001 | 0.001 | 100.0% |
| Longnose cat shark | 0.002 | 0.002 | 100.0% | -- | -- | -- | 0.002 | 0.002 | 100.0% | -- | -- | -- |
| Octopus (unidentified) | 0.001 | 0.001 | 100.0% | 0.036 | 0.036 | 100.0% | -- | -- | -- | 0.002 | 0.002 | 68.3% |

Table 2 continued.

| Limited Entry Sablefish-Endorsed (Primary) Sector | 2009 | | | | | | Jan - Apr 2010 | | | | | |
|--|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|
| | Longline | | | Pot | | | Longline | | | Pot | | |
| | Total catch (mt) | Discard (mt) | Total % discarded |
| Non-groundfish species (cont.) | | | | | | | | | | | | |
| Pacific hagfish | -- | -- | -- | -- | -- | -- | 0.002 | 0.002 | 100.0% | -- | -- | -- |
| Pacific halibut | 30.202 | 30.202 | 100.0% | 0.116 | 0.116 | 100.0% | 8.645 | 8.645 | 100.0% | 0.599 | 0.599 | 100.0% |
| Pacific sleeper shark | 0.017 | 0.017 | 100.0% | -- | -- | -- | 0.007 | 0.007 | 100.0% | -- | -- | -- |
| Scarlet king crab | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.008 | 0.008 | 100.0% |
| Sea cucumber (unidentified) | -- | -- | -- | -- | -- | -- | 0.001 | 0.001 | 100.0% | 0.002 | 0.002 | 100.0% |
| Shark (unidentified) | 0.088 | 0.088 | 100.0% | -- | -- | -- | 0.018 | 0.018 | 100.0% | -- | -- | -- |
| Shrimp (unidentified) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.000 | 0.000 | 100.0% |
| Snailfish (unidentified) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.002 | 0.001 | 48.6% |
| Squid (unidentified) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.001 | 0.000 | 33.3% |
| Tanner crab | -- | -- | -- | 0.002 | 0.002 | 100.0% | -- | -- | -- | -- | -- | -- |
| Tanner crab (unidentified) | -- | -- | -- | 0.005 | 0.005 | 100.0% | -- | -- | -- | -- | -- | -- |
| Tanneri tanner crab | 0.057 | 0.057 | 100.0% | 0.010 | 0.010 | 100.0% | 0.014 | 0.014 | 100.0% | 0.341 | 0.341 | 100.0% |
| Urchin (unidentified) | 0.000 | 0.000 | 100.0% | 0.004 | 0.004 | 100.0% | 0.000 | 0.000 | 100.0% | 0.035 | 0.035 | 100.0% |
| Viperfish (unidentified) | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.000 | 0.000 | 100.0% |

Table 3. Summary of fishing effort, total catch weight (mt), discard weight (mt) and percent discarded from observed limited entry non-sablefish-endorse vessels in 2009 and from January through April 2010. Effort is summarized from observed vessels in terms of retained sablefish (mt), retained FMP groundfish (excluding Pacific hake), the number of trips, the number of sets, and the number of hooks or pots across sets.

| Limited Entry Non-Sablefish-Endorsed Sector | 2009 | | | Jan - Apr 2010 | | |
|---|-------------------------|---------------------|--------------------------|-------------------------|---------------------|--------------------------|
| | Longline | | | Longline | | |
| Summary of effort | | | | | | |
| Retained sablefish (mt) | 12.0 | | | 1.5 | | |
| Retained groundfish (mt) | 30.3 | | | 8.5 | | |
| # of trips | 138 | | | 63 | | |
| # of sets | 271 | | | 138 | | |
| # of hooks | 668813 | | | 337854 | | |
| Summary of catch and discard | | | | | | |
| | Total catch (mt) | Discard (mt) | Total % discarded | Total catch (mt) | Discard (mt) | Total % discarded |
| Rebuilding species | | | | | | |
| Darkblotched rockfish | 0.002 | -- | 0.0% | 0.009 | -- | 0.0% |
| Non-rebuilding species | | | | | | |
| Arrowtooth flounder | 0.001 | -- | 0.0% | 0.003 | -- | 0.0% |
| California skate | 0.000 | 0.000 | 100.0% | -- | -- | -- |
| Chilipepper rockfish | 0.001 | 0.001 | 100.0% | -- | -- | -- |
| Dover sole | 0.184 | 0.180 | 98.0% | 0.052 | 0.051 | 98.2% |
| Flatfish | 0.000 | 0.000 | 66.7% | -- | -- | -- |
| Flatfish (unidentified) | | -- | | | -- | |
| Pacific sanddab | | 0.000 | | | -- | |
| Greenspotted rockfish | 0.001 | -- | 0.0% | -- | -- | -- |
| Grenadier | 0.860 | 0.217 | 25.3% | 0.031 | 0.029 | 91.3% |
| California grenadier | | 0.001 | | | 0.020 | |
| Giant grenadier | | 0.057 | | | 0.002 | |
| Pacific grenadier | | 0.078 | | | 0.006 | |
| Unspecified grenadier | | 0.081 | | | 0.001 | |
| Lingcod | -- | -- | -- | 0.009 | 0.009 | 100.0% |
| Longnose skate | 2.786 | 2.786 | 100.0% | 0.343 | 0.343 | 100.0% |
| Nearshore rockfish | 0.004 | -- | 0.0% | -- | -- | -- |
| Copper rockfish | | -- | | | -- | |
| Pacific flatnose | 0.010 | 0.010 | 100.0% | 0.005 | 0.005 | 100.0% |
| Pacific hake | 0.048 | 0.027 | 56.5% | 0.001 | 0.001 | 100.0% |
| Petrals sole | 0.001 | 0.001 | 100.0% | -- | -- | -- |
| Sablefish | 14.093 | 2.123 | 15.1% | 1.738 | 0.196 | 11.3% |
| Shelf rockfish | 0.017 | -- | 0.0% | -- | -- | -- |
| Flag rockfish | | -- | | | -- | |
| Honeycomb rockfish | | -- | | | -- | |
| Silvergray rockfish | | -- | | | -- | |
| Starry rockfish | | -- | | | -- | |
| Vermilion rockfish | | -- | | | -- | |
| Skates | 0.106 | 0.106 | 100.0% | 0.033 | 0.033 | 100.0% |
| Black skate | | 0.087 | | | 0.027 | |
| Deepsea skate | | 0.005 | | | -- | |
| Pelagic stingray | | 0.012 | | | -- | |
| Sandpaper skate | | 0.001 | | | -- | |
| Unspecified skate | | 0.001 | | | 0.007 | |

Table 3 continued.

| Limited Entry Non-Sablefish- Endorsed Sector | 2009 | | | Jan - Apr 2010 | | |
|---|---------------------|-----------------|----------------------|---------------------|-----------------|----------------------|
| | Longline | | | Longline | | |
| | Total catch (mt) | Discard (mt) | Total % discarded | Total catch (mt) | Discard (mt) | Total % discarded |
| Non-rebuilding species (cont.) | | | | | | |
| Slope rockfish | 1.085 | 0.001 | 0.1% | 0.086 | 0.002 | 2.8% |
| Aurora rockfish | | 0.001 | | | -- | |
| Blackgill rockfish | | 0.001 | | | 0.002 | |
| Redbanded rockfish | | -- | | | -- | |
| Rougheye rockfish | | -- | | | -- | |
| Shortraker rockfish | | -- | | | -- | |
| Splitnose rockfish | | -- | | | -- | |
| Unspecified slope rockfish | | -- | | | -- | |
| Spiny dogfish | 0.365 | 0.365 | 100.0% | 0.079 | 0.076 | 96.0% |
| Spotted ratfish | 0.022 | 0.022 | 100.0% | 0.007 | 0.007 | 100.0% |
| Thornyheads | 18.245 | 1.127 | 6.2% | 8.563 | 0.555 | 6.5% |
| Longspine thornyhead | | 0.249 | | | 0.104 | |
| Shortspine thornyhead | | 0.783 | | | 0.309 | |
| Mixed thornyheads | | 0.095 | | | 0.142 | |
| Non-groundfish species | | | | | | |
| Black hagfish | 0.009 | 0.009 | 100.0% | 0.005 | 0.005 | 100.0% |
| Blue shark | 0.385 | 0.385 | 100.0% | 0.095 | 0.095 | 100.0% |
| Bonito (shortfin mako) shark | 0.032 | -- | 0.0% | -- | -- | -- |
| Brown cat shark | 0.094 | 0.094 | 100.0% | 0.080 | 0.077 | 96.3% |
| California slickhead | -- | -- | -- | 0.000 | 0.000 | 100.0% |
| Decorator/spider crab (unidentified) | -- | -- | -- | 0.000 | 0.000 | 100.0% |
| Deep-sea rock crab | 0.000 | 0.000 | 100.0% | -- | -- | -- |
| Filetail cat shark | 0.555 | 0.555 | 100.0% | 0.089 | 0.089 | 100.0% |
| Hagfish (unidentified) | 0.019 | 0.019 | 100.0% | 0.001 | 0.001 | 100.0% |
| Hair crab | 0.001 | 0.001 | 100.0% | -- | -- | -- |
| Longnose cat shark | 0.002 | 0.002 | 100.0% | 0.013 | 0.013 | 100.0% |
| Octopus (unidentified) | 0.014 | 0.007 | 50.8% | 0.002 | 0.001 | 46.6% |
| Pacific black dogfish | 0.028 | 0.028 | 100.0% | -- | -- | -- |
| Pacific halibut | 0.010 | 0.010 | 100.0% | 0.009 | 0.009 | 100.0% |
| Pacific sleeper shark | 0.021 | 0.021 | 100.0% | 0.012 | 0.012 | 100.0% |
| Scarlet king crab | 0.000 | 0.000 | 100.0% | 0.001 | 0.001 | 100.0% |
| Sea cucumber (unidentified) | 0.012 | 0.012 | 100.0% | 0.023 | 0.023 | 100.0% |
| Shark (unidentified) | 2.205 | 2.205 | 100.0% | 1.594 | 1.594 | 100.0% |
| Slickhead (unidentified) | 0.002 | 0.002 | 100.0% | -- | -- | -- |
| Squid (unidentified) | 0.042 | 0.042 | 100.0% | 0.130 | 0.118 | 91.3% |
| Tanner crab (unidentified) | -- | -- | -- | 0.000 | 0.000 | 100.0% |
| Tanneri tanner crab | 0.011 | 0.011 | 100.0% | 0.001 | 0.001 | 100.0% |
| Urchin (unidentified) | 0.001 | 0.001 | 100.0% | -- | -- | -- |

Table 4. Summary of fishing effort, total catch weight (mt), discard weight (mt) and percent discard on observed open access fixed gear vessels by gear in 2009 and from January through April 2010. Effort is summarized from observed vessels in terms of retained sablefish (mt), retained FMP groundfish (excluding Pacific hake), the number of trips, the number of sets, and the number of hooks or pots across sets.

| Open Access Fixed Gear Sector | 2009 | | | | | | Jan - Apr 2010 | | | | | |
|-------------------------------------|-------------------------|---------------------|--------------------------|-------------------------|---------------------|--------------------------|-------------------------|---------------------|--------------------------|-------------------------|---------------------|--------------------------|
| | Hook-and-line gears | | | Pot | | | Hook-and-line gears | | | Pot | | |
| <u>Summary of effort</u> | | | | | | | | | | | | |
| Retained sablefish (mt) | 17.2 | | | 8.5 | | | 3.2 | | | 2.4 | | |
| Retained groundfish (mt) | 21.7 | | | 8.5 | | | 3.4 | | | 2.4 | | |
| # of trips | 68 | | | 30 | | | 11 | | | 6 | | |
| # of sets | 101 | | | 45 | | | 15 | | | 12 | | |
| # of hooks/pots | 118870 | | | 540 | | | 25494 | | | 145 | | |
| <u>Summary of catch and discard</u> | | | | | | | | | | | | |
| | 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 | 0.003 | -- | 0.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Canary rockfish | 0.002 | 0.002 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Darkblotched rockfish | 0.082 | -- | 0.0% | 0.003 | -- | 0.0% | 0.156 | 0.149 | 95.3% | -- | -- | -- |
| Pacific ocean perch | 0.011 | -- | 0.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Yelloweye rockfish | 0.015 | 0.015 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Non-rebuilding species | | | | | | | | | | | | |
| Arrowtooth flounder | 0.923 | 0.789 | 85.5% | 0.002 | 0.002 | 100.0% | 0.019 | 0.017 | 88.2% | -- | -- | -- |
| Blue rockfish | 0.002 | -- | 0.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dover sole | 0.068 | 0.023 | 33.9% | 0.006 | 0.006 | 100.0% | -- | -- | -- | 0.003 | 0.003 | 100.0% |
| Grenadier | 0.251 | 0.019 | 7.5% | -- | -- | -- | 0.026 | 0.026 | 100.0% | -- | -- | -- |
| Giant grenadier | | 0.005 | | | -- | | | -- | | | -- | |
| Pacific grenadier | | 0.014 | | | -- | | | 0.000 | | | -- | |
| Grenadier (unidentified) | | -- | | | -- | | | 0.026 | | | -- | |
| Lingcod | 0.269 | 0.064 | 23.7% | 0.145 | 0.005 | 3.2% | 0.004 | 0.004 | 100.0% | 0.029 | 0.029 | 100.0% |
| Longnose skate | 1.204 | 0.881 | 73.2% | -- | -- | -- | 0.186 | 0.099 | 53.2% | 0.005 | 0.005 | 100.0% |
| Nearshore rockfish | 0.007 | 0.007 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Copper rockfish | | 0.003 | | | -- | | | -- | | | -- | |
| Quillback rockfish | | 0.004 | | | -- | | | -- | | | -- | |
| Pacific flatnose | 0.001 | 0.001 | 100.0% | -- | -- | -- | 0.000 | 0.000 | 100.0% | -- | -- | -- |
| Pacific hake | 0.024 | 0.024 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Petrale sole | -- | -- | -- | 0.003 | 0.001 | 28.8% | 0.001 | -- | 0.0% | -- | -- | -- |
| Rosy rockfish | 0.000 | -- | 0.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Sablefish | 20.862 | 3.613 | 17.3% | 9.844 | 1.352 | 13.7% | 3.945 | 0.733 | 18.6% | 2.859 | 0.467 | 16.3% |
| Shelf rockfish | 0.002 | 0.000 | 14.7% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Pinkrose rockfish | | -- | | | -- | | | -- | | | -- | |
| Rosethorn rockfish | | 0.000 | | | -- | | | -- | | | -- | |
| Unspecified shelf rockfish | | -- | | | -- | | | -- | | | -- | |

Table 4 continued.

| Open Access Fixed Gear Sector | 2009 | | | | | | Jan - Apr 2010 | | | | | |
|---------------------------------------|---------------------|--------------|-------------------|------------------|--------------|-------------------|---------------------|--------------|-------------------|------------------|--------------|-------------------|
| | Hook-and-line gears | | | Pot | | | Hook-and-line gears | | | Pot | | |
| | 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 | 0.283 | 0.112 | 39.6% | -- | -- | -- | 0.002 | 0.002 | 100.0% | -- | -- | -- |
| Black skate | | 0.102 | | | -- | | | 0.002 | | | -- | |
| Deepsea skate | | 0.001 | | | -- | | | -- | | | -- | |
| Sandpaper skate | | 0.009 | | | -- | | | -- | | | -- | |
| Unspecified skate | | -- | | | -- | | | -- | | | -- | |
| Slope rockfish | 3.881 | 0.163 | 4.2% | 0.060 | 0.018 | 30.1% | 0.047 | 0.012 | 24.5% | 0.019 | 0.001 | 5.4% |
| Aurora rockfish | | 0.011 | | | 0.001 | | | -- | | | 0.001 | |
| Blackgill rockfish | | 0.057 | | | 0.009 | | | 0.009 | | | -- | |
| Redbanded rockfish | | 0.023 | | | 0.005 | | | -- | | | -- | |
| Rougheye rockfish | | 0.058 | | | -- | | | 0.003 | | | -- | |
| Sharpchin fockfish | | -- | | | 0.001 | | | -- | | | -- | |
| Shortraker rockfish | | -- | | | -- | | | -- | | | -- | |
| Shortraker/Rougheye fockfish | | 0.011 | | | -- | | | -- | | | -- | |
| Splitnose rockfish | | 0.000 | | | 0.002 | | | -- | | | -- | |
| Unspecified slope rockfish | | 0.002 | | | -- | | | -- | | | -- | |
| Spiny dogfish | 1.505 | 1.505 | 100.0% | 0.001 | 0.001 | 100.0% | 0.135 | 0.085 | 62.8% | -- | -- | -- |
| Spotted ratfish | 0.022 | 0.011 | 50.5% | -- | -- | -- | 0.001 | 0.001 | 100.0% | -- | -- | -- |
| Thornyheads | 0.284 | 0.216 | 76.0% | 0.005 | 0.000 | 6.8% | 0.298 | 0.298 | 100.0% | -- | -- | -- |
| Longspine thornyhead | | 0.006 | | | 0.000 | | | 0.013 | | | -- | |
| Shortspine thornyhead | | 0.210 | | | 0.000 | | | 0.284 | | | -- | |
| Mixed thornyheads | | -- | | | -- | | | -- | | | -- | |
| Yellowtail rockfish | 0.012 | 0.010 | 84.3% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Non-groundfish species | | | | | | | | | | | | |
| Blue shark | 0.435 | 0.427 | 98.2% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Brown cat shark | 0.047 | 0.047 | 100.0% | 0.000 | 0.000 | 100.0% | 0.005 | 0.005 | 100.0% | -- | -- | -- |
| California slickhead | 0.001 | 0.001 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Cat shark (unidentified) | 0.046 | 0.046 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Dungeness crab | 0.000 | 0.000 | 100.0% | 0.002 | 0.002 | 100.0% | -- | -- | -- | -- | -- | -- |
| Filetail cat shark | 0.405 | 0.356 | 87.9% | -- | -- | -- | 0.001 | 0.001 | 100.0% | -- | -- | -- |
| Hagfish (unidentified) | 0.002 | 0.002 | 100.0% | 0.000 | 0.000 | 100.0% | -- | -- | -- | -- | -- | -- |
| Long-armed spider crab | -- | -- | -- | 0.000 | 0.000 | 100.0% | -- | -- | -- | -- | -- | -- |
| Lyre crab (unidentified) | -- | -- | -- | 0.000 | 0.000 | 100.0% | -- | -- | -- | -- | -- | -- |
| Octopus (unidentified) | -- | -- | -- | 0.003 | 0.002 | 58.8% | -- | -- | -- | -- | -- | -- |

Table 4 continued.

| Open Access Fixed Gear Sector | 2009 | | | | | | Jan - Apr 2010 | | | | | |
|---------------------------------------|---------------------|--------------|-------------------|------------------|--------------|-------------------|---------------------|--------------|-------------------|------------------|--------------|-------------------|
| | Hook-and-line gears | | | Pot | | | Hook-and-line gears | | | Pot | | |
| | 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.) | | | | | | | | | | | | |
| Pacific hagfish | 0.001 | 0.001 | 100.0% | 0.001 | 0.001 | 100.0% | -- | -- | -- | -- | -- | -- |
| Pacific halibut | 1.181 | 1.181 | 100.0% | 0.006 | 0.006 | 100.0% | 0.048 | 0.048 | 100.0% | 0.017 | 0.017 | 100.0% |
| Pacific sleeper shark | 0.037 | 0.037 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Scarlet king crab | -- | -- | -- | 0.030 | 0.020 | 65.7% | -- | -- | -- | -- | -- | -- |
| Sea cucumber (unidentified) | 0.000 | 0.000 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Shark (unidentified) | 0.093 | 0.093 | 100.0% | 0.038 | 0.038 | 100.0% | -- | -- | -- | 0.227 | 0.227 | 100.0% |
| Sixgill shark | 0.014 | 0.014 | 100.0% | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Spotted prawn | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.017 | -- | 0.0% |
| Tanneri tanner crab | 0.007 | 0.007 | 93.7% | 0.005 | 0.005 | 100.0% | 0.006 | 0.006 | 100.0% | -- | -- | -- |
| Urchin (unidentified) | -- | -- | -- | 0.002 | 0.002 | 100.0% | -- | -- | -- | -- | -- | -- |

Table 5. Discard ratios and standard errors from observed trips in the 2009 limited entry (LE) sablefish-endorse sector by gear type. Ratios are computed as the observed discard weight divided by the weight of retained sablefish. Species are grouped according to Appendix C. Discard ratios presented here are used directly in subsequent total mortality estimates and are grouped across management areas (36° to 40°10' N. latitude and north of 40°10' N. latitude) in order to ensure sufficient sample size.

| North of 36° N. Latitude | LE Sablefish-Endorsed (Primary) | | | |
|---|---------------------------------|----------------|---------------|----------------|
| | Longline | | Pot | |
| | Discard ratio | Standard Error | Discard ratio | Standard Error |
| Rebuilding species | | | | |
| Bocaccio | -- | -- | -- | -- |
| Canary rockfish | 0.0000 | NA | -- | -- |
| Darkblotched rockfish | -- | -- | 0.0001 | 0.0013 |
| Pacific ocean perch | 0.0000 | 0.0121 | 0.0000 | NA |
| Widow rockfish | -- | -- | -- | -- |
| Yelloweye rockfish | 0.0005 | 0.0352 | -- | -- |
| Non-rebuilding species | | | | |
| Arrowtooth flounder | 0.0358 | 0.1084 | 0.0006 | 0.0104 |
| Big skate | 0.0041 | 0.3762 | -- | -- |
| Blackgill rockfish | -- | -- | 0.0000 | 0.0007 |
| California skate | 0.0000 | NA | -- | -- |
| Dover sole | 0.0013 | 0.0132 | 0.0016 | 0.0059 |
| Greenspotted rockfish | 0.0000 | NA | 0.0000 | 0.0006 |
| Greenstriped rockfish | 0.0005 | 0.0212 | -- | -- |
| Grenadiers | 0.0126 | 0.3098 | -- | -- |
| Lingcod (Washington/Oregon) | 0.0068 | 0.0527 | -- | -- |
| Lingcod (California) | -- | -- | 0.0234 | 0.1095 |
| Longnose skate | 0.0548 | 0.1454 | -- | -- |
| Longspine thornyhead (North Pt. Conception) | 0.0001 | 0.0024 | 0.0000 | 0.0010 |
| Mixed thornyheads | -- | -- | -- | -- |
| Other groundfish | 0.0026 | 0.0231 | 0.0000 | NA |
| Other shelf rockfish | 0.0003 | 0.0024 | 0.0000 | 0.0002 |
| Other slope rockfish | 0.0016 | 0.0036 | 0.0019 | 0.0026 |
| Pacific cod | 0.0002 | 0.0188 | -- | -- |
| Pacific hake | 0.0001 | 0.0165 | -- | -- |
| Petrals sole | -- | -- | -- | -- |
| Redstripe rockfish (North of 40°10' N. lat.) | -- | -- | -- | -- |
| Sablefish | 0.0462 | 0.0217 | 0.2741 | 0.1556 |
| Shortspine thornyhead (North Pt. Conception) | 0.0010 | 0.0032 | 0.0000 | 0.0004 |
| Silvergray rockfish (North of 40°10' N. lat.) | -- | -- | -- | -- |
| Spiny dogfish | 0.0928 | 0.2479 | 0.0017 | 0.0134 |
| Splitnose rockfish (North of 40°10' N. lat.) | 0.0000 | 0.0053 | 0.0000 | NA |
| Unspecified skate | 0.0001 | 0.0028 | -- | -- |
| Yellowmouth (North of 40°10' N. lat.) | 0.0000 | 0.0154 | -- | -- |
| Yellowtail rockfish | 0.0000 | 0.0251 | -- | -- |
| Non-groundfish species | | | | |
| Dungeness crab | -- | -- | 0.0000 | 0.0007 |
| Other non-FMP flatfish | 0.0001 | 0.1386 | -- | -- |
| Other non-FMP skate | 0.0016 | 0.0215 | 0.0000 | NA |
| Other nongroundfish | 0.3426 | 0.4504 | 0.0023 | 0.0106 |
| Tanner crab | 0.0006 | 0.0156 | 0.0003 | 0.0043 |

Table 6. Discard ratios and standard errors from observed trips in the 2009 open access (OA) fixed gear sector by gear and the combined OA and limited entry (LE) non-sablefish-endorsed sector fishing with hook-and-line gears north of 40°10' N. latitude. Ratios are computed as the observed discard weight divided by the weight of retained sablefish. Species are grouped according to Appendix C. Discard ratios presented here are used directly in subsequent total mortality estimates and are grouped across sector when necessary to ensure sufficient sample size.

| North of 40°10' N. Latitude | OA Fixed Gear | | | | LE Non-Sablefish-Endorsed + OA Fixed Gear | |
|--|---------------------|----------------|---------------|----------------|---|----------------|
| | Hook-and-line gears | | Pot | | Hook-and-line gears | |
| | Discard ratio | Standard Error | Discard ratio | Standard Error | Discard ratio | Standard Error |
| Rebuilding species | | | | | | |
| Canary rockfish | 0.0001 | NA | -- | -- | 0.0001 | NA |
| Yelloweye rockfish | 0.0011 | 0.0765 | -- | -- | 0.0010 | 0.0758 |
| Non-rebuilding species | | | | | | |
| Arrowtooth flounder | 0.0579 | 0.1930 | -- | -- | 0.0541 | 0.1882 |
| Dover sole | 0.0009 | 0.0102 | -- | -- | 0.0008 | 0.0093 |
| Lingcod (Washington/Oregon) | 0.0037 | 0.4367 | 0.0088 | -- | 0.0034 | 0.4364 |
| Lingcod (California) | 0.0010 | 0.1479 | -- | -- | 0.0009 | 0.1478 |
| Longnose skate | 0.0202 | 0.0708 | -- | -- | 0.0199 | 0.0665 |
| Other groundfish | 0.0003 | 0.0075 | -- | -- | 0.0004 | 0.0063 |
| Other nearshore rockfish | 0.0005 | 0.0305 | -- | -- | 0.0005 | 0.0303 |
| Other shelf rockfish | -- | -- | -- | -- | -- | -- |
| Other slope rockfish | 0.0079 | 0.0168 | -- | -- | 0.0074 | 0.0153 |
| Pacific hake | 0.0012 | 0.0170 | -- | -- | 0.0011 | 0.0167 |
| Sablefish | 0.2329 | 0.2419 | 0.0120 | 0.0186 | 0.2218 | 0.2252 |
| Shortspine thornyhead (North Pt. Conception) | 0.0105 | 0.0826 | -- | -- | 0.0098 | 0.0801 |
| Spiny dogfish | 0.1055 | 0.5590 | -- | -- | 0.1105 | 0.5358 |
| Splitnose rockfish | 0.0000 | 0.0049 | -- | -- | 0.0000 | 0.0039 |
| Unspecified skate | -- | -- | -- | -- | -- | -- |
| Yellowtail rockfish | 0.0007 | 0.0220 | -- | -- | 0.0007 | 0.0219 |
| Non-groundfish species | | | | | | |
| Dungeness crab | 0.0000 | NA | 0.0016 | NA | 0.0000 | NA |
| Other non-FMP skate | 0.0077 | 1.1000 | -- | -- | 0.0072 | 1.0994 |
| Other nongroundfish | 0.1276 | 0.3385 | 0.0024 | 0.0102 | 0.1300 | 0.3302 |

Table 7. Discard ratios and standard errors from observed trips in the 2009 non-nearshore fixed gear groundfish fishery from 40°10' to 36° N. latitude by sector and gear type. Ratios are computed as the observed discard weight divided by the weight of retained sablefish. Species are grouped according to Appendix C. Discard ratios presented here are used directly in subsequent total mortality estimates and are grouped across sector or gear type in order to ensure sufficient sample size.

| 40°10' to 36° N. Latitude | LE Non-Sablefish- Endorsed | | OA Fixed Gear | | LE Non-Sablefish- Endorsed + OA Fixed Gear | |
|--|-------------------------------|-------------------|------------------|-------------------|--|-------------------|
| | Longline | | Pot | | Hook-and-line gears | |
| | Discard ratio | Standard Error | Discard ratio | Standard Error | Discard ratio | Standard Error |
| Rebuilding species (None) | | | | | | |
| Non-rebuilding species | | | | | | |
| Arrowtooth flounder | -- | -- | 0.0005 | NA | -- | -- |
| Blackgill rockfish | -- | -- | 0.0020 | 0.0073 | -- | -- |
| Chilipepper rockfish | 0.0002 | -- | -- | -- | 0.0001 | -- |
| Dover sole | 0.0031 | 0.0466 | 0.0012 | 0.0087 | 0.0036 | 0.0343 |
| Grenadiers | 0.0129 | 0.1167 | -- | -- | 0.0126 | 0.0990 |
| Longnose skate | 0.0522 | 0.1381 | -- | -- | 0.0565 | 0.1639 |
| Longspine thornyhead (North Pt. Conception) | 0.0003 | 0.0048 | -- | -- | 0.0005 | 0.0049 |
| Other groundfish | 0.0027 | 0.0389 | -- | -- | 0.0022 | 0.0380 |
| Other slope rockfish | -- | -- | 0.0011 | 0.0065 | 0.0002 | 0.0103 |
| Petrals sole | 0.0001 | NA | -- | -- | 0.0001 | NA |
| Sablefish | 0.2397 | 0.3724 | 0.1414 | 0.0945 | 0.1998 | 0.3105 |
| Sharpchin rockfish | -- | -- | 0.0003 | NA | -- | -- |
| Shortspine thornyhead (North Pt. Conception) | 0.0010 | 0.0050 | 0.0000 | NA | 0.0036 | 0.0141 |
| Spiny dogfish | 0.0244 | 0.1834 | 0.0003 | 0.0031 | 0.0296 | 0.1932 |
| Splitnose rockfish | -- | NA | 0.0001 | NA | -- | -- |
| Non-groundfish species | | | | | | |
| Dungeness crab | -- | -- | 0.0001 | NA | -- | -- |
| Other non-FMP skate | -- | -- | -- | -- | 0.0005 | 0.0176 |
| Other nongroundfish | 0.0112 | 0.0818 | 0.0019 | 0.0161 | 0.0134 | 0.0634 |
| Tanner crab | 0.0018 | 0.0131 | 0.0008 | 0.0095 | 0.0020 | 0.0128 |

Table 8. Discard ratios and standard errors from observed trips in the 2009 non-nearshore fixed gear groundfish fishery south of 36° N. latitude by sector and gear type. Ratios are computed as the observed discard weight divided by the weight of retained FMP groundfish species (except Pacific hake). Species are grouped according to Appendix C. Discard ratios presented here are used directly in subsequent total mortality estimates and are grouped across sector or gear type in order to ensure sufficient sample size.

| South of 36° N. Latitude | LE Non-Sablefish-Endorsed | | OA Fixed Gear | | | |
|--|---------------------------|----------------|---------------------|----------------|---------------|----------------|
| | Longline | | Hook-and-line gears | | Pot | |
| | Discard ratio | Standard Error | Discard ratio | Standard Error | Discard ratio | Standard Error |
| Rebuilding species | | | | | | |
| (None) | -- | -- | -- | -- | -- | -- |
| Non-rebuilding species | | | | | | |
| Blackgill rockfish | 0.0000 | 0.0017 | 0.0094 | 0.0128 | -- | -- |
| California skate | 0.0000 | NA | -- | -- | -- | -- |
| Dover sole | 0.0070 | 0.0167 | 0.0008 | 0.0069 | 0.0003 | 0.0034 |
| Grenadiers | 0.0039 | 0.0326 | -- | -- | -- | -- |
| Longnose skate | 0.1075 | 0.2525 | 0.0900 | 0.3744 | -- | -- |
| Longspine thornyhead (North Pt. Conception) | 0.0000 | 0.0069 | -- | -- | 0.0000 | NA |
| Longspine thornyhead (South Pt. Conception) | 0.0106 | 0.0061 | 0.0007 | NA | -- | -- |
| Mixed thornyheads | 0.0041 | 0.1068 | -- | -- | -- | -- |
| Other flatfish | 0.0000 | 0.0102 | -- | -- | -- | -- |
| Other groundfish | 0.0007 | 0.0400 | 0.0014 | 0.0068 | -- | -- |
| Other shelf rockfish | -- | -- | 0.0001 | 0.0011 | -- | -- |
| Other slope rockfish | 0.0000 | 0.0020 | -- | -- | 0.0001 | 0.0016 |
| Pacific hake | 0.0012 | 0.0279 | 0.0012 | 0.0517 | -- | -- |
| Petrals sole | -- | -- | -- | -- | 0.0002 | 0.0074 |
| Sablefish | 0.0338 | 0.2052 | 0.0708 | 0.2183 | 0.2049 | 0.2058 |
| Shortspine thornyhead (North Pt. Conception) | 0.0001 | 0.0156 | 0.0035 | 0.0534 | -- | -- |
| Shortspine thornyhead (South Pt. Conception) | 0.0335 | 0.0165 | 0.0050 | 0.0288 | -- | -- |
| Spiny dogfish | 0.0026 | 0.0758 | 0.0004 | NA | -- | -- |
| Splitnose rockfish | -- | -- | -- | -- | 0.0005 | 0.0036 |
| Unspecified skate | 0.0008 | 0.0512 | 0.0002 | NA | -- | -- |
| Non-groundfish species | | | | | | |
| Other non-FMP skate | 0.0038 | 0.1064 | 0.0004 | NA | -- | -- |
| Other nongroundfish | 0.1395 | 0.1937 | 0.0776 | 0.2956 | 0.0173 | 0.0341 |
| Tanner crab | 0.0001 | 0.0302 | 0.0006 | 0.0360 | 0.0005 | NA |

Table 9. Retained sablefish (lbs), total rebuilding species catch (lbs), and rebuilding species bycatch ratios from observed trips in the 2009 non-nearshore fixed gear groundfish fishery north of 40°10' N. latitude and between 40°10' and 36° N. latitude. Bycatch ratios are computed as the observed total catch weight divided by the observed weight of retained sablefish.

| | Longline | | Pot | |
|--|----------------------------|--------------------------|----------------------------|--------------------------|
| | North of 40°10' N. Lat. | 40°10' to 36° N. Lat. | North of 40°10' N. Lat. | 40°10' to 36° N. Lat. |
| Total retained sablefish observed (lbs) | 236432 | 26765 | 79871 | 236432 |
| Total catch observed (lbs) | | | | |
| Bocaccio | 27.2 | -- | -- | -- |
| Canary rockfish | 9.0 | -- | -- | -- |
| Cowcod | -- | -- | -- | -- |
| Darkblotched rockfish | 298.4 | -- | 20.9 | 10.0 |
| Pacific ocean perch | 66.9 | -- | 1.2 | -- |
| Widow rockfish | 4.0 | -- | -- | -- |
| Yelloweye rockfish | 148.5 | -- | -- | -- |
| Observed bycatch ratio | | | | |
| Bocaccio | 0.0001 | -- | -- | -- |
| Canary rockfish | 0.0000 | -- | -- | -- |
| Cowcod | -- | -- | -- | -- |
| Darkblotched rockfish | 0.0013 | -- | 0.0003 | 0.0001 |
| Pacific ocean perch | 0.0003 | -- | 0.0000 | -- |
| Widow rockfish | 0.0000 | -- | -- | -- |
| Yelloweye rockfish | 0.0006 | -- | -- | -- |

Table 10. 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 sectors from September 2003 through April 2010. The date range of biological data for each species is also provided. Biological data is only summarized for non-rebuilding groundfish/non-groundfish species with more than 10 observations.

| | Years available | # lengths | # sexes |
|--|-----------------------------|------------------|----------------|
| Rebuilding species | | | |
| Bocaccio | 2006 - 2008 | 22 | 0 |
| Canary rockfish | 2004 - Apr 2010 | 133 | 66 |
| Cowcod | 2004 | 1 | 0 |
| Darkblotched rockfish | 2004 - Apr 2010 | 297 | 66 |
| Pacific ocean perch | 2004 - 2009 | 36 | 3 |
| Widow rockfish | 2005, 2007 - 2008, Apr 2010 | 14 | 2 |
| Yelloweye rockfish | 2004 - 2009 | 244 | 138 |
| Non-rebuilding species / Non-groundfish | | | |
| Aurora rockfish | 2004, 2008 - Apr 2010 | 45 | 0 |
| Blackgill rockfish | 2004 - 2009 | 76 | 0 |
| Dover sole | 2007, 2009 | 15 | 0 |
| Dungeness crab | 2007 - Apr 2010 | 50 | 50 |
| Greenstriped rockfish | 2005, 2007 - 2009 | 36 | 0 |
| Kelp greenling | 2006 | 11 | 11 |
| Lingcod | 2004 - Apr 2010 | 554 | 3 |
| Longnose skate | 2006 - Apr 2010 | 37 | 35 |
| Longspine thornyhead | 2005 - Apr 2010 | 1718 | 5 |
| Pacific halibut | 2004 - Apr 2010 | 115 | 0 |
| Redbanded rockfish | 2005 - Apr 2010 | 90 | 1 |
| Rosethorn rockfish | 2005 - 2009 | 11 | 0 |
| Rougheye rockfish | 2004 - Apr 2010 | 402 | 213 |
| Sablefish | 2005 - Apr 2010 | 6988 | 16 |
| Shortraker rockfish | 2004 - 2008 | 42 | 18 |
| Shortspine thornyhead | 2005 - Apr 2010 | 1230 | 2 |
| Silvergray rockfish | 2004 - 2005, 2008 | 10 | 9 |
| Spiny dogfish | 2006 - Apr 2010 | 5357 | 5269 |
| Splitnose rockfish | 2004, 2007 - 2009 | 17 | 0 |
| Yellowtail rockfish | 2006 - 2009 | 54 | 0 |
| Protected species | | | |
| Coho salmon | 2005, 2007 | 2 | 2 |

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 gyoferus*
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 Scorpaenidae, even if not listed, that occur in the Washington, Oregon, and California area. The Scorpaenidae genera are *Sebastes*, *Scorpaena*, *Sebastolobus*, and *Scorpaenodes*.

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

Black-and-yellow, *S. chrysomelas*.
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. serranooides*
Pink, *S. eos*
Pinkrose, *S. simulator*
Pygmy, *S. wilsoni*
Pacific ocean perch, *S. alutus*
Quillback, *S. maliger*
Redbanded, *S. babcocki*
Redstripe, *S. proriger*
Rosethorn, *S. helvomaculatus*
Rosy, *S. rosaceus*
Rougheye, *S. alentianus*
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. nigrocinctus*
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, 5, 6, 7, 8, and 9).

| PacFIN Species ID | PacFIN Common Name | Species Group - North of 40° 10' N latitude | Species Group - South of 40° 10' N latitude | FMP |
|-------------------|-----------------------------|---|---|-----|
| ALBC | ALBACORE | Other nongroundfish | Other nongroundfish | |
| AKSK | ALASKA SKATE | Other non-FMP skate | Other non-FMP skate | |
| AMCK | ATKA MACKEREL | Other nongroundfish | Other nongroundfish | |
| APLC | ALASKA PLAICE | Other non-FMP flatfish | Other non-FMP flatfish | |
| ARR1 | NOM. AURORA ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| ARRA | AURORA ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| ART1 | NOM. ARROWTOOTH FLOUNDER | Arrowtooth flounder | Arrowtooth flounder | yes |
| ARTH | ARROWTOOTH FLOUNDER | Arrowtooth flounder | Arrowtooth flounder | yes |
| ASKT | ALEUTIAN SKATE | Other non-FMP skate | Other non-FMP skate | |
| ASRK | PACIFIC ANGEL SHARK | Other nongroundfish | Other nongroundfish | |
| BABL | BLACK ABALONE | Other nongroundfish | Other nongroundfish | |
| BANK | BANK ROCKFISH | Other slope rockfish | Bank rockfish (Remaining rockfish) | yes |
| BCAC | BOCACCIO | Bocaccio (Remaining rockfish) | Bocaccio | yes |
| BCC1 | NOM. BOCACCIO | Bocaccio (Remaining rockfish) | Bocaccio | yes |
| BCLM | BUTTER CLAM | Other nongroundfish | Other nongroundfish | |
| BGL1 | NOM. BLACKGILL ROCKFISH | Other slope rockfish | Blackgill (Remaining rockfish) | yes |
| BHAG | BLACK HAGFISH | Other nongroundfish | Other nongroundfish | |
| BISC | BROWN IRISH LORD | Other nongroundfish | Other nongroundfish | |
| BKCR | BLUE KING CRAB | Other nongroundfish | Other nongroundfish | |
| BLCK | BLACK ROCKFISH | Black rockfish | Black rockfish | yes |
| BLGL | BLACKGILL ROCKFISH | Other slope rockfish | Blackgill (Remaining rockfish) | yes |
| BLK1 | NOM. BLACK ROCKFISH | Black rockfish | Black rockfish | yes |
| BLPT | BLACK EELPOUT | Other nongroundfish | Other nongroundfish | |
| BLSK | BLACK SKATE | Other non-FMP skate | Other non-FMP skate | |
| BLU1 | NOM. BLUE ROCKFISH | Blue rockfish | Blue rockfish | yes |
| BLUR | BLUE ROCKFISH | Blue rockfish | Blue rockfish | yes |
| BMCK | BULLET MACKEREL | Other nongroundfish | Other nongroundfish | |
| BMRL | BLUE MARLIN | Other nongroundfish | Other nongroundfish | |
| BMSL | BLUE OR BAY MUSSEL | Other nongroundfish | Other nongroundfish | |
| BNK1 | NOM. BANK ROCKFISH | Other slope rockfish | Bank rockfish (Remaining rockfish) | yes |
| BRNZ | BRONZESPOTTED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| BRW1 | NOM. BROWN ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| BRWN | BROWN ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| BRZ1 | NOM. BRONZESPOTTED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| BSCL | BUFFALO SCULPIN | Other nongroundfish | Other nongroundfish | |
| BSJK | BLACK SKIPJACK | Other nongroundfish | Other nongroundfish | |
| BSKT | BIG SKATE | Big skate | Big skate | yes |
| BSOL | BUTTER SOLE | Other flatfish | Other flatfish | yes |
| BSRK | BLUE SHARK | Other nongroundfish | Other nongroundfish | |
| BSRM | UNSP. BAIT SHRIMP | Other nongroundfish | Other nongroundfish | |
| BTCR | BAIRDI TANNER CRAB | Tanner crab | Tanner crab | |
| BTNA | BLUEFIN TUNA | 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 |
|-------------------|--------------------------------|---|---|-----|
| BTRY | BAT RAY | Other nongroundfish | Other nongroundfish | |
| BYEL | BLACK-AND-YELLOW ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| BYL1 | NOM. BLACK-AND-YELLOW ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| CBZ1 | NOM. CABEZON | Other groundfish | Cabezon | yes |
| CBZN | CABEZON | Other groundfish | Cabezon | yes |
| CEEL | SPOTTED CUSK-EEL | Other nongroundfish | Other nongroundfish | |
| CHL1 | NOM. CALIFORNIA HALIBUT | California halibut | California halibut | |
| CHLB | CALIFORNIA HALIBUT | California halibut | California halibut | |
| CHN1 | NOM. CHINA ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| CHNA | CHINA ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| CHNK | CHINOOK SALMON | Other nongroundfish | Other nongroundfish | |
| CHUM | CHUM SALMON | Other nongroundfish | Other nongroundfish | |
| CKLE | BASKET COCKLE | Other nongroundfish | Other nongroundfish | |
| CLC1 | NOM. CALICO ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| CLCO | CALICO ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| CLP1 | NOM. CHILIPEPPER | Chilipepper (Remaining rockfish) | Chilipepper rockfish | yes |
| CLPR | CHILIPEPPER | Chilipepper (Remaining rockfish) | Chilipepper rockfish | yes |
| CMCK | CHUB MACKEREL | Other nongroundfish | Other nongroundfish | |
| CMEL | CHAMELEON ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| CML1 | NOM. CHAMELEON ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| CMSL | CALIFORNIA MUSSEL | Other nongroundfish | Other nongroundfish | |
| CNR1 | NOM. CANARY ROCKFISH | Canary rockfish | Canary rockfish | yes |
| CNRY | CANARY ROCKFISH | Canary rockfish | Canary rockfish | yes |
| COHO | COHO SALMON | Other nongroundfish | Other nongroundfish | |
| COP1 | NOM. COPPER ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| COPP | COPPER ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| CPLN | CAPELIN | Other nongroundfish | Other nongroundfish | |
| CSKT | CALIFORNIA SKATE | California skate | California skate | yes |
| CSL1 | NOM. CURLFIN SOLE | Other flatfish | Other flatfish | yes |
| CSLK | CALIFORNIA SLICKHEAD | Other nongroundfish | Other nongroundfish | |
| CSRK | BROWN CAT SHARK | Other nongroundfish | Other nongroundfish | |
| CSOL | CURLFIN SOLE | Other flatfish | Other flatfish | yes |
| CTRB | C-O SOLE | Other non-FMP flatfish | Other non-FMP flatfish | |
| CUDA | PACIFIC BARRACUDA | Other nongroundfish | Other nongroundfish | |
| CWC1 | NOM. COWCOD ROCKFISH | Other shelf rockfish | Cowcod | yes |
| CWCD | COWCOD ROCKFISH | Other shelf rockfish | Cowcod | yes |
| DARK | DARK ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| DBR1 | NOM. DARKBLOTCHED ROCKFISH | Darkblotched rockfish | Darkblotched rockfish | yes |
| DBRK | DARKBLOTCHED ROCKFISH | Darkblotched rockfish | Darkblotched rockfish | yes |
| DCRB | DUNGENESS CRAB | Dungeness crab | Dungeness crab | |
| DFLT | UNSP. DEEP FLOUNDERS | Other flatfish | Other flatfish | yes |
| DOVR | DOVER SOLE | Dover sole | Dover sole | yes |
| DRDO | DORADO | Other nongroundfish | Other nongroundfish | |
| DSOL | DEEPSEA SOLE | Other non-FMP flatfish | Other non-FMP flatfish | |
| DSRK | SPINY DOGFISH | Spiny dogfish | Spiny dogfish | yes |
| DTRB | DIAMOND TURBOT | Other non-FMP flatfish | Other non-FMP flatfish | |
| DUSK | DUSKY ROCKFISH | Other groundfish | Other groundfish | yes |
| DVR1 | NOM. DOVER SOLE | Dover sole | Dover sole | yes |
| DWRF | DWARF-RED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| 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 |
|-------------------|-----------------------------|---|---|-----|
| EGLS | ENGLISH SOLE | English sole | English sole | yes |
| ESTR | EASTERN OYSTER | Other nongroundfish | Other nongroundfish | |
| ETNA | BIGEYE TUNA | Other nongroundfish | Other nongroundfish | |
| EULC | EULACHON | Eulachon | Eulachon | |
| EURO | EUROPEAN OYSTER | Other nongroundfish | Other nongroundfish | |
| FLAG | FLAG ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| FLG1 | NOM. FLAG ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| FNTS | FANTAIL SOLE | Other non-FMP flatfish | Other non-FMP flatfish | |
| FRCK | FRECKLED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| FSOL | FLATHEAD SOLE | Other flatfish | Other flatfish | yes |
| GABL | GREEN ABALONE | Other nongroundfish | Other nongroundfish | |
| GBAS | GIANT SEA BASS | Other nongroundfish | Other nongroundfish | |
| GBL1 | NOM. GREENBLOTCHED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| GBLC | GREENBLOTCHED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| GCLM | GAPER CLAM | Other nongroundfish | Other nongroundfish | |
| GDUK | GEODUCK | Other nongroundfish | Other nongroundfish | |
| GGRD | GIANT GRENADIER | Other nongroundfish | Other nongroundfish | |
| GKCR | GOLDEN KING CRAB | Other nongroundfish | Other nongroundfish | |
| GPH1 | NOM. GOPHER ROCKFISH | Other nearshore rockfish | Gopher rockfish (Remaining rockfish) | yes |
| GPHR | GOPHER ROCKFISH | Other nearshore rockfish | Gopher rockfish (Remaining rockfish) | yes |
| GPRW | GOLDEN PRAWN | Other nongroundfish | Other nongroundfish | |
| GRAS | GRASS ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| GRDR | UNSP. GRENADIERS | Grenadiers | Grenadiers | yes |
| GREN | PACIFIC GRENADIER | Grenadiers | Grenadiers | yes |
| GRS1 | NOM. GRASS ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| GSP1 | NOM. GREENSPOTTED ROCKFISH | Greenspotted rockfish | Greenspotted rockfish | yes |
| GSPT | GREENSPOTTED ROCKFISH | Greenspotted rockfish | Greenspotted rockfish | yes |
| GSQD | GIANT SQUID | Other nongroundfish | Other nongroundfish | |
| GSR1 | NOM. GREENSTRIPED ROCKFISH | Greenstriped rockfish | Greenstriped rockfish | yes |
| GSRK | GREENSTRIPED ROCKFISH | Greenstriped rockfish | Greenstriped rockfish | yes |
| GSRM | GHOST SHRIMP | Other nongroundfish | Other nongroundfish | |
| GSTG | GREEN STURGEON | Other nongroundfish | Other nongroundfish | |
| GTRB | GREENLAND TURBOT | Other non-FMP flatfish | Other non-FMP flatfish | |
| HBRK | HALFBANDED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| HCLM | HORSE CLAMS | Other nongroundfish | Other nongroundfish | |
| HLQN | HARLEQUIN ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| HNY1 | NOM. HONEYCOMB ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| HNYC | HONEYCOMB ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| HTRB | HORNYHEAD TURBOT | Other non-FMP flatfish | Other non-FMP flatfish | |
| ISRK | BIGEYE THRESHER SHARK | Other nongroundfish | Other nongroundfish | |
| JCLM | CALIFORNIA JACKKNIFE CLAM | Other nongroundfish | Other nongroundfish | |
| JMCK | JACK MACKEREL | Other nongroundfish | Other nongroundfish | |
| KFSH | GIANT KELPFISH | Other nongroundfish | Other nongroundfish | |
| KGL1 | NOM. KELP GREENLING | Kelp greenling | Kelp greenling | yes |
| KLP1 | NOM. KELP ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| KLPG | KELP GREENLING | Kelp greenling | Kelp greenling | yes |
| KLPR | KELP ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| KMKA | KAMCHATKA FLOUNDER | Other non-FMP flatfish | Other non-FMP flatfish | |
| KSTR | KUMAMOTO OYSTER | Other nongroundfish | Other nongroundfish | |

| PacFIN Species ID | PacFIN Common Name | Species Group - North of 40° 10' N latitude | Species Group - South of 40° 10' N latitude | FMP |
|--------------------------|--------------------------------|--|--|------------|
| LCD1 | NOM. LINGCOD | Lingcod | Lingcod | yes |
| LCLM | NATIVE LITTLENECK | Other nongroundfish | Other nongroundfish | |
| LCOD | LINGCOD | Lingcod | Lingcod | yes |
| LDAB | LONGFIN SANDDAB | Other non-FMP flatfish | Other non-FMP flatfish | |
| LDB1 | NOM. LONGFIN SANDDAB | Other non-FMP flatfish | Other non-FMP flatfish | |
| LOBS | CALIF. SPINY LOBSTER | Other nongroundfish | Other nongroundfish | |
| LSKT | LONGNOSE SKATE | Longnose skate | Longnose skate | yes |
| LSP1 | NOM. LONGSPINE THORNYHEAD | Longspine thornyhead | Longspine thornyhead | yes |
| LSPN | LONGSPINE THORNYHEAD | Longspine thornyhead | Longspine thornyhead | yes |
| LSRK | LEOPARD SHARK | Other groundfish | Other groundfish | yes |
| LSTR | OLYMPIA OYSTER | Other nongroundfish | Other nongroundfish | |
| LUVR | LOUVAR | Other nongroundfish | Other nongroundfish | |
| MACL | MUD CLAMS | Other nongroundfish | Other nongroundfish | |
| MAKO | SHORTFIN MAKO SHARK | Other nongroundfish | Other nongroundfish | |
| MCLM | MANILA CLAM | Other nongroundfish | Other nongroundfish | |
| MEEL | MONKEYFACE EEL | Other nongroundfish | Other nongroundfish | |
| MISC | MISC. FISH/ANIMALS | Other nongroundfish | Other nongroundfish | |
| MOLA | COMMON MOLA | Other nongroundfish | Other nongroundfish | |
| MRLN | STRIPED MARLIN | Other nongroundfish | Other nongroundfish | |
| MSC2 | MISCELLANEOUS FISH | Other nongroundfish | Other nongroundfish | |
| MSHP | PLAINFIN MIDSHIPMAN | Other nongroundfish | Other nongroundfish | |
| MSQD | MARKET SQUID | Other nongroundfish | Other nongroundfish | |
| MSRM | MUD SHRIMP | Other nongroundfish | Other nongroundfish | |
| MXR1 | NOM. MEXICAN ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| MXRF | MEXICAN ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| NANC | NORTHERN ANCHOVY | Other nongroundfish | Other nongroundfish | |
| NRCK | NORTHERN ROCKFISH | Other groundfish | Other groundfish | yes |
| NSHR | NORTHERN NEAR-SHORE ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| NSLF | NORTHERN SHELF ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| NSLP | NORTHERN SLOPE ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| NUSF | NOR. UNSP. SHELF ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| NUSP | NOR. UNSP. SLOPE ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| NUSR | NOR. UNSP. NEAR-SHORE ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| OABL | OTHER ABALONE | Other nongroundfish | Other nongroundfish | |
| OANC | OTHER ANCHOVY | Other nongroundfish | Other nongroundfish | |
| OBAS | OTHER BASS | Other nongroundfish | Other nongroundfish | |
| OCLM | OTHER CLAM | Other nongroundfish | Other nongroundfish | |
| OCRB | OTHER CRAB | Other nongroundfish | Other nongroundfish | |
| OCRK | OTHER CROAKER | Other nongroundfish | Other nongroundfish | |
| OCTP | UNSP. OCTOPUS | Other nongroundfish | Other nongroundfish | |
| ODSR | OTHER DEMERSAL RKFSH | Other groundfish | Other groundfish | yes |
| OECH | OTHER ECHINODERM | Other nongroundfish | Other nongroundfish | |
| OFLT | OTHER FLATFISH | Other flatfish | Other flatfish | yes |
| OGRN | OTHER GROUND FISH | Other groundfish | Other groundfish | yes |
| OLV1 | NOM. OLIVE ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| OLVE | OLIVE ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| OMSK | OTHER MOLLUSKS | Other nongroundfish | Other nongroundfish | |
| OPLG | OTHER PELAGIC RKFSH | Other groundfish | Other groundfish | yes |
| ORCK | OTHER ROCKFISH | Other slope rockfish (>150 fm) | Other slope rockfish (>150 fm) | yes |
| ORCK | OTHER ROCKFISH | Other shelf rockfish (<150 fm) | Other shelf rockfish (<150 fm) | yes |
| ORND | OTHER ROUND FISH | 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 |
|-------------------|-----------------------------|---|---|-----|
| OSCL | OTHER SCALLOP | Other nongroundfish | Other nongroundfish | |
| OSKT | OTHER SKATES | Unspecified skate | Unspecified skate | yes |
| OSLR | OTHER SLOPE RKFSH | Other slope rockfish | Other slope rockfish | yes |
| OSRK | OTHER SHARK | Other nongroundfish | Other nongroundfish | |
| OSRM | OTHER SHRIMP | Other nongroundfish | Other nongroundfish | |
| OSTR | OTHER OYSTER | Other nongroundfish | Other nongroundfish | |
| OTCR | OPILIO TANNER CRAB | Tanner crab | Tanner crab | |
| OTNA | OTHER TUNA | Other nongroundfish | Other nongroundfish | |
| OURC | OTHER SEA URCHINS | Other nongroundfish | Other nongroundfish | |
| OWFS | OCEAN WHITEFISH | Other nongroundfish | Other nongroundfish | |
| PABL | PINK ABALONE | Other nongroundfish | Other nongroundfish | |
| PBNT | PACIFIC BONITO | Other nongroundfish | Other nongroundfish | |
| PBTR | PACIFIC BUTTERFISH | Other nongroundfish | Other nongroundfish | |
| PCLM | PISMO CLAM | Other nongroundfish | Other nongroundfish | |
| PCOD | PACIFIC COD | Pacific cod | Other groundfish | yes |
| PDAB | PACIFIC SANDDAB | Other flatfish | Other flatfish | yes |
| PDB1 | NOM. PACIFIC SANDDAB | Other flatfish | Other flatfish | yes |
| PFNS | PACIFIC FLATNOSE | Other groundfish | Other groundfish | yes |
| PGMY | PYGMY ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| PHAG | PACIFIC HAGFISH | Other nongroundfish | Other nongroundfish | |
| PHLB | PACIFIC HALIBUT | Other nongroundfish | Other nongroundfish | |
| PHRG | PACIFIC HERRING | Other nongroundfish | Other nongroundfish | |
| PINK | PINK SALMON | Other nongroundfish | Other nongroundfish | |
| PLCK | WALLEYE POLLOCK | Other groundfish | Other groundfish | yes |
| PNK1 | NOM. PINK ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| PNKR | PINK ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| POMF | PACIFIC POMFRET | Other nongroundfish | Other nongroundfish | |
| POP | PACIFIC OCEAN PERCH | Pacific ocean perch | Other slope rockfish | yes |
| POP1 | GEN. SHELF/SLOPE RF | Other slope rockfish | Other slope rockfish | yes |
| POP2 | NOMINAL POP | Pacific ocean perch | Other slope rockfish | yes |
| PRCL | PURPLE CLAM | Other nongroundfish | Other nongroundfish | |
| PROW | PROWFISH | Other nongroundfish | Other nongroundfish | |
| PRR1 | NOM. PINKROSE ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| PRRK | PINKROSE ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| PSDN | PACIFIC SARDINE | Other nongroundfish | Other nongroundfish | |
| PSHP | PINK SHRIMP | Other nongroundfish | Other nongroundfish | |
| PSRK | PELAGIC THRESHER SHARK | Other nongroundfish | Other nongroundfish | |
| PSTR | PACIFIC OYSTER | Other nongroundfish | Other nongroundfish | |
| PTR1 | NOM. PETRALE SOLE | Petrale sole | Petrale sole | yes |
| PTRL | PETRALE SOLE | Petrale sole | Petrale sole | yes |
| PUGT | PUGET SOUND ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| PWHT | PACIFIC WHITING | Pacific hake | Pacific hake | yes |
| QCLM | NORTHERN QUAHOG CLAM | Other nongroundfish | Other nongroundfish | |
| QFSH | QUEENFISH | Other nongroundfish | Other nongroundfish | |
| QLB1 | NOM. QUILLBACK ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| QLBK | QUILLBACK ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| RABL | RED ABALONE | Other nongroundfish | Other nongroundfish | |
| RATF | SPOTTED RATFISH | Other groundfish | Other groundfish | yes |
| RCK1 | BOCACCIO+CHILIPEPPER RCKFSH | Other shelf rockfish | Other shelf rockfish | yes |
| RCK2 | UNSP. BOLINA RCKFSH | Other nearshore rockfish | Other nearshore rockfish | yes |
| RCK3 | UNSP. DPWTR REDS RCKFSH | Other slope rockfish | Other slope rockfish | yes |
| RCK4 | UNSP. REDS RCKFSH | 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 |
|--------------------------|---------------------------|--|--|------------|
| RCK5 | UNSP. SMALL REDS RCKFSH | Other groundfish | Other groundfish | yes |
| RCK6 | UNSP. ROSEFISH RCKFSH | Other groundfish | Other groundfish | yes |
| RCK7 | UNSP. GOPHER RCKFSH | Other nearshore rockfish | Gopher rockfish (Remaining rockfish) | yes |
| RCK8 | CANARY+VERMILION RCKFSH | Canary rockfish | Canary rockfish | yes |
| RCK9 | BLACK+BLUE ROCKFISH | Black rockfish | Black rockfish | yes |
| RCKG | ROCK GREENLING | Other nongroundfish | Other nongroundfish | |
| RCLM | RAZOR CLAM | Other nongroundfish | Other nongroundfish | |
| RCRB | ROCK CRAB | Other nongroundfish | Other nongroundfish | |
| RDB1 | NOM. REDBANDED ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| RDBD | REDBANDED ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| REDS | REDSTRIPE ROCKFISH | Redstripe rockfish (Remaining rockfish) | Other shelf rockfish | yes |
| REX | REX SOLE | Other flatfish | Other flatfish | yes |
| REX1 | NOM. REX SOLE | Other flatfish | Other flatfish | yes |
| REYE | ROUGHEYE ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| RFLT | REMAINING FLATFISH | Other flatfish | Other flatfish | yes |
| RGL1 | NOM. ROCK GREENLING | Other nongroundfish | Other nongroundfish | |
| RGRN | REMAINING GROUND FISH | 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 ROUND FISH | Other groundfish | Other groundfish | yes |
| RSCL | RED IRISH LORD | Other nongroundfish | Other nongroundfish | |
| RSL1 | NOM. ROCK SOLE | Other flatfish | Other flatfish | yes |
| RSOL | ROCK SOLE | Other flatfish | Other flatfish | yes |
| RSRM | GRASS SHRIMP | Other nongroundfish | Other nongroundfish | |
| RST1 | NOM. ROSETHORN ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| RSTN | ROSETHORN ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| RURC | RED SEA URCHIN | Other nongroundfish | Other nongroundfish | |
| RZCL | ROSY RAZOR CLAM | Other nongroundfish | Other nongroundfish | |
| SABL | SABLEFISH | Sablefish | Sablefish | yes |
| SAIL | SAILFISH | Other nongroundfish | Other nongroundfish | |
| SARY | PACIFIC SAURY | Other nongroundfish | Other nongroundfish | |
| SBL1 | NOM. SHORTBELLY ROCKFISH | Shortbelly rockfish | Shortbelly rockfish | yes |
| SBLY | SHORTBELLY ROCKFISH | Shortbelly rockfish | Shortbelly rockfish | yes |
| SCLM | SOFT-SHELLED CLAM | Other nongroundfish | Other nongroundfish | |
| SCLP | UNSP. SCULPIN | Other nongroundfish | Other nongroundfish | |
| SCOR | CALIFORNIA SCORPIONFISH | Other groundfish | Other groundfish | yes |
| SCR1 | NOM. CALIF. SCORPIONFISH | Other groundfish | Other groundfish | yes |
| SDB1 | NOM. SPECKLED SANDDAB | Other non-FMP flatfish | Other non-FMP flatfish | |
| SFL1 | NOM. STARRY FLOUNDER | Starry flounder | Starry flounder | yes |
| SFLT | UNSP. SHALLOW FLOUNDERS | Other flatfish | Other flatfish | yes |
| SHAD | UNSPECIFIED SHAD | Other nongroundfish | Other nongroundfish | |
| SHP1 | NOM. CALIFORNIA SHEEPHEAD | Other nongroundfish | Other nongroundfish | |
| SHPD | CALIFORNIA SHEEPHEAD | Other nongroundfish | Other nongroundfish | |
| SHRP | SHARPCHIN ROCKFISH | Sharpchin rockfish | Sharpchin rockfish | yes |
| SKCR | SCARLET KING CRAB | Other nongroundfish | Other nongroundfish | |
| SLGR | SILVERGREY ROCKFISH | Silvergrey rockfish (Remaining 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 |
|-------------------|--------------------------------|---|---|-----|
| SLNS | SLENDER SOLE | Other non-FMP flatfish | Other non-FMP flatfish | |
| SMLT | UNSP. SMELT | Other nongroundfish | Other nongroundfish | |
| SNOS | SPLITNOSE ROCKFISH | Splitnose rockfish (Remaining rockfish) | Splitnose rockfish | yes |
| SNS1 | NOM. SPLITNOSE ROCKFISH | Splitnose rockfish (Remaining rockfish) | Splitnose rockfish | yes |
| SOCK | SOCKEYE SALMON | Other nongroundfish | Other nongroundfish | |
| SPK1 | NOM. SPECKLED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| SPKL | SPECKLED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| SPRW | SPOTTED PRAWN | Other nongroundfish | Other nongroundfish | |
| SPSK | SANDPAPER SKATE | Other non-FMP skate | Other non-FMP skate | |
| SQID | UNSP. SQUID | Other nongroundfish | Other nongroundfish | |
| SQR1 | NOM. SQUARESPOT | Other shelf rockfish | Other shelf rockfish | yes |
| SQRS | SQUARESPOT ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| SRFP | SURFPERCH SPP. | Other nongroundfish | Other nongroundfish | |
| SRKR | SHORTRAKER ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| SSCL | SHARPNOSE SCULPIN | Other nongroundfish | Other nongroundfish | |
| SSDB | SPECKLED SANDDAB | Other non-FMP flatfish | Other non-FMP flatfish | |
| SSHR | SOUTHERN NEAR-SHORE ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| SSKT | STARRY SKATE | Other non-FMP skate | Other non-FMP skate | |
| SSLF | SOUTHERN SHELF ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| SSLP | SOUTHERN SLOPE ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| SSO1 | NOM. SAND SOLE | Other flatfish | Other flatfish | yes |
| SSOL | SAND SOLE | Other flatfish | Other flatfish | yes |
| SSP1 | NOM. SHORTSPINE THORNYHEAD | Shortspine thornyhead | Shortspine thornyhead | yes |
| SSPF | SHORTBILL SPEARFISH | Other nongroundfish | Other nongroundfish | |
| SSPN | SHORTSPINE THORNYHEAD | Shortspine thornyhead | Shortspine thornyhead | yes |
| SSRD | Deep So. Near-shore RF | Other nearshore rockfish | Other nearshore rockfish | yes |
| SSRK | SOUPFIN SHARK | Other groundfish | Other groundfish | yes |
| SSRS | Shallow So. Near-shore RF | Other nearshore rockfish | Other nearshore rockfish | yes |
| STAR | STARRY ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| STL1 | NOM. STRIPETAILED 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 | STRIPETAILED ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| STRY | STARRY FLOUNDER | Starry flounder | Starry flounder | yes |
| SUSF | SOU. UNSP. SHELF ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| SUSP | SOU. UNSP. SLOPE ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| SUSR | SOU. UNSP. NEAR-SHORE ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| SWRD | SWORDFISH | Other nongroundfish | Other nongroundfish | |
| SWS1 | NOM. SWORDSPINE ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| SWSP | SWORDSPINE ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| TCOD | PACIFIC TOMCOD | Other nongroundfish | Other nongroundfish | |
| TGR1 | NOM. TIGER ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| THD1 | NOM. THORNYHEADS | Mixed thornyheads | Mixed thornyheads | yes |
| THDS | THORNYHEADS (MIXED) | Mixed thornyheads | Mixed thornyheads | yes |
| TIGR | TIGER ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| TRE1 | NOM. TREEFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| TREE | TREEFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| TSRK | COMMON THRESHER SHARK | Other nongroundfish | Other nongroundfish | |

| PacFIN Species ID | PacFIN Common Name | Species Group - North of 40° 10' N latitude | Species Group - South of 40° 10' N latitude | FMP |
|--------------------------|----------------------------|--|--|------------|
| UABL | UNSPECIFIED ABALONE | Other nongroundfish | Other nongroundfish | |
| UCLM | UNSPECIFIED CLAM | Other nongroundfish | Other nongroundfish | |
| UCRB | UNSPECIFIED CRAB | Other nongroundfish | Other nongroundfish | |
| UDAB | UNSP. SANDDABS | Other flatfish | Other flatfish | yes |
| UDF1 | UNSP. DEEP-91 FLOUNDERS | Other flatfish | Other flatfish | yes |
| UDF2 | UNSP. DEEP-95 FLOUNDERS | Other flatfish | Other flatfish | yes |
| UDM1 | UNSP. DEMERSAL-91 | Other groundfish | Other groundfish | yes |
| UDNR | UNSP. DEEP NEAR-SHORE RF | Other nearshore rockfish | Other nearshore rockfish | yes |
| UDSR | UNSP. DEMERSAL RKFSH | Other groundfish | Other groundfish | yes |
| UDW1 | SHORTRAKER+ROUGHEYE | Other slope rockfish | Other slope rockfish | yes |
| UECH | UNSPECIFIED ECHINODERM | Other nongroundfish | Other nongroundfish | |
| UFL1 | FLOUNDERS (NO FSOL) | Other flatfish | Other flatfish | yes |
| UFLT | UNSP. FLATFISH | Other flatfish | Other flatfish | yes |
| UGLG | UNSP. GREENLING | Other nongroundfish | Other nongroundfish | |
| UGRN | UNSP. GROUND FISH | Other groundfish | Other groundfish | yes |
| UHAG | UNSPECIFIED HAGFISH | Other nongroundfish | Other nongroundfish | |
| UHLB | UNSPECIFIED HALIBUT | Other nongroundfish | Other nongroundfish | |
| UJEL | UNSP. JELLYFISH | Other nongroundfish | Other nongroundfish | |
| UKCR | UNSP. KING CRAB | Other nongroundfish | Other nongroundfish | |
| UMCK | UNSP. MACKEREL | Other nongroundfish | Other nongroundfish | |
| UMSK | UNSPECIFIED MOLLUSKS | Other nongroundfish | Other nongroundfish | |
| UPLG | UNSP. PELAGIC RKFSH | Other groundfish | Other groundfish | yes |
| UPOP | UNSP. POP GROUP | Pacific ocean perch | Other slope rockfish | yes |
| URCK | UNSP. ROCKFISH | Other slope rockfish (>150 fm) | Other slope rockfish (>150 fm) | yes |
| URCK | UNSP. ROCKFISH | Other shelf rockfish (<150 fm) | Other shelf rockfish (<150 fm) | yes |
| URK1 | SRKR+REYE+NRCK+SHRP | Other slope rockfish | Other slope rockfish | yes |
| URND | UNSP. ROUNDFISH | Other groundfish | Other groundfish | yes |
| USCL | UNSPECIFIED SCALLOP | Other nongroundfish | Other nongroundfish | |
| USCU | UNSP. SEA CUCUMBERS | Other nongroundfish | Other nongroundfish | |
| USF1 | UNSP. SHALLOW-91 FLOUNDERS | Other flatfish | Other flatfish | yes |
| USHR | UNSP. NEAR-SHORE ROCKFISH | Other nearshore rockfish | Other nearshore rockfish | yes |
| USKT | UNSP. SKATE | Unspecified skate | Unspecified skate | yes |
| USLF | UNSP. SHELF ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| USLP | UNSP. SLOPE ROCKFISH | Other slope rockfish | Other slope rockfish | yes |
| USLR | UNSP. SLOPE RKFSH | Other slope rockfish | Other slope rockfish | yes |
| USMN | UNSP. SALMON | Other nongroundfish | Other nongroundfish | |
| USR1 | UNSP. SLOPE-91 | Other groundfish | Other groundfish | yes |
| USR2 | UNSP. SLOPE-93 | Other groundfish | Other groundfish | yes |
| USRK | UNSP. SHARK | Other nongroundfish | Other nongroundfish | |
| USRM | UNSP. OCEAN SHRIMP | Other nongroundfish | Other nongroundfish | |
| USTG | UNSP. STURGEON | Other nongroundfish | Other nongroundfish | |
| USTR | UNSPECIFIED OYSTER | Other nongroundfish | Other nongroundfish | |
| UTCR | UNSP. TANNER CRAB | Tanner crab | Tanner crab | |
| UTNA | UNSPECIFIED TUNA | Other nongroundfish | Other nongroundfish | |
| UTRB | UNSP. TURBOTS | Other flatfish | Other flatfish | yes |
| UURC | UNSP. SEA URCHINS | Other nongroundfish | Other nongroundfish | |
| VCLM | VARNISH CLAM | Other nongroundfish | Other nongroundfish | |
| VRM1 | NOM. VERMILLION ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| VRML | VERMILION ROCKFISH | Other shelf rockfish | Other shelf rockfish | yes |
| WABL | WHITE ABALONE | Other nongroundfish | Other nongroundfish | |
| WBAS | WHITE SEABASS | Other nongroundfish | Other nongroundfish | |
| WCLM | WASHINGTON CLAM | 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 |
|--------------------------|---------------------------|--|--|------------|
| 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 | |
| YFY1 | NOM. YELLOWEYE ROCKFISH | Yelloweye rockfish | Yelloweye rockfish | yes |
| YEYE | YELLOWEYE ROCKFISH | Yelloweye rockfish | Yelloweye rockfish | yes |
| YLTL | YELLOWTAIL | Other nongroundfish | Other nongroundfish | |
| YMTH | YELLOWMOUTH ROCKFISH | Yellowmouth rockfish (Remaining rockfish) | Other slope rockfish | yes |
| YSOL | YELLOWFIN SOLE | Other non-FMP flatfish | Other non-FMP flatfish | |
| YTNA | YELLOWFIN TUNA | Other nongroundfish | Other nongroundfish | |
| YTR1 | NOM. YELLOWTAIL ROCKFISH | Yellowtail rockfish | Yellowtail rockfish (Remaining rockfish) | yes |
| YTRK | YELLOWTAIL ROCKFISH | Yellowtail rockfish | Yellowtail rockfish (Remaining rockfish) | yes |