

Science, Service, Stewardship



## NOAA FISHERIES SERVICE

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

NOAA



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## Introduction

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### Overview

This report summarizes discarded catch data collected by the West Coast Groundfish Observer Program (WCGOP) from the Oregon and California state-permitted nearshore fixed gear fisheries (generally in depths < 50 fathoms) from January 1, 2009 through April 30, 2010. The WCGOP collects at-sea data from limited-entry (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 Nearshore Fixed Gear Fisheries

The U.S. west coast nearshore groundfish commercial fleet operates from northern Oregon to southern California. Historically, nearshore fisheries were accessible to everyone. However, due to the increasing number of participants and concerns of overcapacity, California and Oregon began requiring state permits in 2003 and 2004, respectively. Regulations for the nearshore fisheries are set by both the Pacific Fishery Management Council (PFMC) and the states. The Pacific Fishery Management Council sets the optimum yield (OY) for groundfish species and harvest guidelines. The commercial fishery has two sectors, the limited-entry sector which requires federally issued groundfish permits and the open access sector, which does not require federal permits. Vessels that participate in the state-permitted nearshore fixed gear fisheries can belong to either sector. There are a number of fishing area closures designated in federal groundfish management that apply to the commercial nearshore fixed gear fisheries.

In addition to regulations set by the PFMC, each state manages its nearshore fishery independently by issuing state regulations on the cumulative trip limits of nearshore species in their state waters. Cumulative trip limits are a specified weight of fish that can be landed during a particular time period, usually two-months. Often, cumulative trip limits set by the states are more restrictive than the federal limits. Additional management measures for each state are highlighted in the sections below. Further information on state nearshore fishery regulations can also be found online for Oregon at: ([www.dfw.state.or.us/fish/commercial/](http://www.dfw.state.or.us/fish/commercial/)) and for California at: ([www.dfg.ca.gov/marine/regulations.asp#commercial](http://www.dfg.ca.gov/marine/regulations.asp#commercial)).

Vessels participating in the nearshore fisheries range in size from 10 to 50 feet, with an average length of 25 feet. They use a variety of fixed gear including hand-lines, cable gear, fishing poles, and pots. In shallow water, fishers often fish in coves or drift along a reef. They set and retrieve their gear multiple times a day and generally land their fish on a daily basis. Quotas for the nearshore fisheries are small; generally between 100 to 2,000 lbs every two months. Many of those who fish in shallow water participate in the live fish market, necessitating careful handling of retained fish. They sell live fish for as much as \$8 per pound to restaurants or other vendors. These vessels retain only the portion of their catch that is marketable and permitted to be landed. The portion of catch that is not marketable or prohibited from landing is discarded at-sea. Fishers might discard certain size fish or dead fish to maximize the value of their landed catch.

### Washington

The State of Washington does not allow commercial fishing within its territorial waters (0-3 miles from the coastline). This prohibition removes fishing grounds from access by commercial nearshore fishers.

## **Oregon**

Oregon's nearshore commercial fishery (hook & line, pot, and longline) typically occurs in shallow water (< 30 fathoms) and targets species such as black rockfish, blue rockfish, china rockfish, copper rockfish, quillback rockfish, grass rockfish, cabezon, and greenlings. Oregon's nearshore permitting process assigns permits to vessels. State nearshore management employs minimum size limits for many nearshore species, as well as two month cumulative trip limits and annual landing caps (maximum landed weight in a 12 month period). Black rockfish trip limits are tied to four Oregon Black Rockfish Zones: 1) Tillamook Head (45° 56' 45" N. lat) to Cape Lookout (45° 20' 15" N. lat); 2) Cascade Head (45° 03' 50" N. lat) to Cape Perpetua (44° 18' N. lat); 3) from a point (43° 30' N. lat), approximately 8.5 miles north of the Coos Bay north jetty to a point (43° 03' N. lat), about 4.5 miles south of the Bandon south jetty; and 4) Mack Arch (42° 13' 40" N. lat) to the Oregon-California border (42° N. lat). In 2004, Oregon began requiring that nearshore fishers complete a vessel logbook.

In 2009, Oregon issued 55 black/blue rockfish permits, which allow for the landing of black rockfish and blue rockfish, and 72 black/blue rockfish permits with a nearshore endorsement, which allows landing of black rockfish and blue rockfish along with 21 additional Oregon designated nearshore groundfish species. In 2010, Oregon issued 56 black/blue rockfish permits and 69 black/blue rockfish permits with a nearshore endorsement.

## **California**

California state management designates four geographic zones along the coastline: 1) the south coast - south of Point Conception (34° 27' N. lat.); 2) the south-central coast - from Point Conception (34° 27' N. lat.) to Point Ano Nuevo (37° 07' N. lat.); 3) the north-central coast - from Point Ano Nuevo (34° 27' N. lat.) to 40° 10' N. latitude near Cape Mendocino; and 4) the north coast - from 40° 10' N. latitude to the Oregon-California border (42° N. lat.). In 2009, state management closed the areas south of 40° 10' N. latitude during March and April. The north coast area (north of 40° 10' N. latitude to the Oregon-California border) remained open year-round, except for seasonal closures of cabezon, greenlings, and California sheephead.

The state of California issues two permits for fishing within the nearshore area: a shallow nearshore species fishery permit and a deeper nearshore species fishery permit. In 2009, there were a total of 319 California nearshore permits and in 2010, there were 304 permits. The permits are assigned to an individual person and can only be used in the one regional management area specified on the permit. Fishers can either have a single nearshore permit (deeper or shallow) or hold both types of permits. A trap endorsement can also be tied to a shallow nearshore permit to allow for the use of trap gear when fishing for nearshore species. In addition, a nearshore fishery bycatch permit can be issued for trawl gear or entangling nets to allow for small amounts of nearshore landings per trip, but only in the south-central and south coast regions.

The deeper nearshore permit is required for landing black rockfish, blue rockfish, brown rockfish, calico rockfish, copper rockfish, olive rockfish, quillback rockfish, and treefish. The shallow nearshore permit is required for landing black-and-yellow rockfish, cabezon, California scorpionfish, California sheephead, china rockfish, gopher rockfish, grass rockfish, greenlings, and kelp rockfish. Lingcod is also commonly targeted with shallow nearshore permit species. Most live fish landings consist of species in the shallow nearshore group. State nearshore management employs minimum size limits for many nearshore species and two month cumulative trip limits. A limit on the number of hooks per vessel or line also exists for certain areas. California instituted a voluntary nearshore logbook program in 2005.

## **Commercial Nearshore 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. Fish ticket information is uploaded to PacFIN on a monthly basis and subject to updates frequently thereafter. Fish tickets are trip-aggregated sales receipts for market species/categories. As fish tickets only provide information on the amount of fish landed, to ensure that total catch does not exceed the annual 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 rule-making has extended NMFS's ability to require that California and Oregon vessels which only fish in the 0-3 mile state territorial zone also carry observers. 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**

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### **Nearshore Fisheries Permit Selection**

From a sampling standpoint, the WCGOP recognizes three distinct sectors that are part of nearshore fixed gear groundfish fisheries on the west coast. These include Oregon black/blue rockfish, Oregon black/blue rockfish with a nearshore endorsement, and California nearshore. In all cases, state-issued nearshore 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 of that sector; 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, selection cycles do not coincide with the date range of the observer data analyzed in this report. For Oregon black/blue rockfish and Oregon black/blue rockfish with a nearshore endorsement, the data in this report (Jan 2008 - Apr 2009) were collected during two selection cycles, January 1, 2009 through December 31, 2009 (selection cycle 6) and January 1, 2010 through December 31, 2010 (selection cycle 7). Random stratified samples were pulled separately from each of these two sectors even though the sampling time frames were identical. For California nearshore, the data in this report (Jan 2009 - Apr 2010) were also collected during two selection cycles, January 1, 2009 through December 31, 2009 (selection cycle 8) and January 1, 2010 through December 31, 2010 (selection cycle 9).

Due to the large number of permits in these fisheries, criteria were developed to narrow down the selection lists to those permits that are most active in each sector and to vessels that have sufficient space to carry an observer. This

increases the probability that the vessels selected will be actively fishing and observable, thereby increasing the probability of obtaining observations in all geographical and temporal strata.

Selection lists for the two Oregon nearshore fixed gear sectors were developed based on permit information from the Oregon Department of Fish and Wildlife and additional information from the PacFIN database. For each Oregon nearshore permit, it was first determined whether the vessel/permit holder had a nearshore endorsement. Separate lists were compiled for permits that were associated with a nearshore endorsement and permits that were not endorsed, as the two groups are subject to different landings limits and thus might differ in fishing behavior. The following criteria were then used to narrow down the selection lists for both Oregon nearshore fixed gear sectors:

- State permit was assigned to a vessel.
- Vessel landed more than 1,000 lbs of rockfish during an 18-month period prior to the start of the selection cycle.
- Vessel used fixed gear to land rockfish.
- Vessel was greater than 17 feet.

The selection list for the California nearshore sector was developed based on permit information from the California Department of Fish and Game and additional information from the PacFIN database. It included all permits that met the following criteria:

- Permit was valid in one of the four state-designated management zones.
- Permit holder landed 1,000 lbs of groundfish or more during an 18-month period prior to the start of the selection cycle.
- Permit was used on a fixed gear vessel greater than 17 feet.

The number of permits selected from each nearshore sector was thus a subset of all permits issued in the fishery and varied for each selection cycle. The number of permits selected for the CA nearshore fishery was 101 (out of 319) in 2009 and 103 (out of 304) in 2010. There were 30 (out of 55) OR blue/black rockfish permits selected in 2009 and 37 (out of 56) in 2010. For OR blue/black rockfish permits with a nearshore endorsement, there were 57 (out of 72) permits selected in 2009 and 57 (out of 69) in 2010.

The WCGOP aggregates ports along the US west coast into port groups, which are considered strata. Nearshore permits are assigned to a port group based upon the location of the previous year's landings. Within each port group, permits are randomly selected for coverage during a two-month period, which coincides with the two-month cumulative trip limit periods. 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 is currently cycling through the fleets with California and Oregon state nearshore permits 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>.

## **Coverage of the Nearshore Fisheries**

Some vessels whose permits are selected for a specific two-month period might not be covered by an observer during that period or might not be covered on all trips during that period. Single trips 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 few nearshore vessels are given selection cycle waivers. A 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. These issues might create some bias when trying to expand observer data to the entire fleet but cannot be avoided at this time. In the future, as alternative methods of monitoring these vessels become available, they will be applied.

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. These vessels are added to the selection list for the next two-month period. 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 the subsequent selection list 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 2009a).

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 numbers

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 small boats using fixed gear, refer to the WCGOP Observer Training Manual, Chapter 6 (NWFSC 2009a).

### **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 2009a).

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: expand the subsample of species composition to the set-level; translate observer species codes to the appropriate PacFIN fish ticket data codes; identify and select the observer data records to match to fish tickets; query and process PacFIN fish ticket data associated with the nearshore fixed gear groundfish fisheries including the observed trips; and then merge 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, the translation step of the process adds coding to the WCGOP observer data that allows for the appropriate match to the coding system used to record data 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 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 matches the total trip pounds on the fish ticket, because the fish ticket weight is often 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 and observer trip weights for that category, using the following equation 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 equation used to adjust the WCGOP data is:

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

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.

Starting in 2006, observer retained catch was matched to fish ticket landings in the nearshore fixed gear fisheries. In previous years, the combination of the possibility of an undetected second fish ticket for a trip, along with the inability to determine when a fish ticket was only partially observed made matching observed landings to fish ticket landings problematic. Some nearshore vessels fish a series of day trips prior to landing their catch and generating a fish ticket. Occasionally, an observer was only available for a portion of the series of day trips, resulting in only a portion of the landings on the fish ticket being observed. In 2005, the program recognized this issue and started to document occurrences of partial coverage.

## Analysis

Observer coverage rates in the nearshore fixed gear fisheries were calculated as the proportion of fleet-wide landings of nearshore species observed. A list of nearshore species and nearshore catch category assignments is provided in Appendix B. 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 bycatch and discard rates for each major species or species group. Rates were calculated for all of the stocks currently managed under rebuilding plans, prohibited species in each fishery (Pacific halibut), and all stocks for which discard is estimated annually on a fleet-wide basis. The ratio estimates ( $R_i$ ) were calculated by area ( $i$ ):

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

where:

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

$x_{it}$  = the retained pounds of nearshore species in the set  $t$

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

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

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  $\text{Var}(R_i)$  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 from each state. Variance estimates, therefore, do not relate back directly to the random stratified sampling framework employed by WCGOP, where vessels/permits within each port group were the sampling unit.

Discard ratios were computed as the observed discard weight of a particular species over the observed weight of all retained nearshore species (Appendix B). Similarly, bycatch ratios were calculated as the observed total catch weight (discarded + retained) divided by the observed weight of retained nearshore species.

In all cases where a nearshore 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 NUSR - northern unspecified nearshore 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 nearshore species 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 in the non-nearshore fixed gear fisheries, as any weights in observer and fish ticket data that share the same species code will match and adjust properly.

## **Results And Discussion**

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### **Overall Coverage Levels**

The total number of trips, sets, and vessels observed in the nearshore fixed gear fisheries in 2009 and from January through April 2010 is summarized in Table 1 by WCGOP port group, gear type and state. Although the WCGOP selects a random sample separately from each of the three nearshore sectors (Oregon Black/Blue rockfish, Oregon Black/Blue rockfish with nearshore endorsement and California nearshore), observer coverage is summarized jointly for all three sampling frames. Coverage rates in the nearshore fisheries were calculated as the proportion of nearshore species landings that were observed (Table 1). A list of nearshore species and nearshore catch category assignments is provided in Appendix B. California sheephead, brown Irish lord, red Irish lord, and buffalo sculpin are the only nearshore species that are not included in the Pacific Coast Groundfish Fishery Management Plan.

On a coastwide basis, observer coverage in the nearshore fixed gear fisheries increased in 2009 relative to 2008, from 4% to 5% (NMFS 2009b). Landings of nearshore groundfish species in 2009 increased only slightly relative to 2008, from 482 to 484 mt.. Overall coverage of the Oregon nearshore fishery remained at 8% in both 2008 and 2009, compared with a slight increase in California coverage from 2% in 2008 to 3% in 2009. The highest port group coverage rate (11%) was calculated for the combined Astoria/Newport/Coos Bay port groups. The Crescent City port group had the highest nearshore landings by weight, which resulted in the highest level of observer coverage in terms of number of observed trips, vessels, and landing weight.

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.

## **Spatial Distribution of Observations**

The distribution of observed trips and sets among port groups provides perspective on where observer coverage was focused on the U.S. west coast in the nearshore fixed gear groundfish fisheries. Overall, the port group of Crescent City, which includes the California port of Crescent City, as well as the Oregon ports of Brookings, Gold Beach, and Port Orford, had the largest number of observed trips, sets, and vessels, as well as the largest nearshore fishery landings (Table 1). The second largest number of observed trips, sets, and vessels in 2009 were from the Astoria/Newport/Coos Bay port groups. Landings in these ports increased from 2008 to 2009, 35.7 to 45.6 mt, therefore more trips and sets were observed in 2009 to accommodate the increase. Thus, the coverage rate in this area remained the same at 11%. Relatively large landings are also associated with port groups in central and southern California, including Monterey, Morro Bay, Santa Barbara and Los Angeles, however a much smaller percentage of nearshore landings in these port groups were observed.

Although the random sampling design employed by the WCGOP is stratified by port group, commercial nearshore fishing permits in California and black rockfish trip limits in Oregon are tied to specific spatial zones. State spatial zoning and observer coverage are not necessarily consistent and thus, it would be inappropriate to base analyses of observer data within the context of nearshore management zones. However, catch composition and bycatch trends might vary spatially within each state.

## **Observed Total Catch, Discard Ratios, and Bycatch Ratios**

The observed total catch weight (mt), discard weight (mt), and the percent discarded for all species in the 2009 nearshore fixed gear fishery are presented in Table 2a by state. Table 2b presents the same information for the nearshore fishery in January through April of 2010. Observed coastwide total catch (discarded + retained) was largely comprised of black rockfish, cabezon, kelp greenling, lingcod, and other nearshore rockfish (including blue rockfish). The largest components of observed coastwide discard were black rockfish, blue rockfish, cabezon, kelp greenling, and lingcod (Tables 2a & b). Of the rebuilding species, canary rockfish and yelloweye rockfish were caught in Oregon (Table 2a) and bocaccio, canary, widow and yelloweye rockfishes were caught in California in 2009 (Table 2a). Only canary and yelloweye rockfish were caught during the beginning of the 2010 fisheries (January through April, both states combined) (Table 2b). For protected species, a small amount of chinook and coho salmon was caught off Oregon during 2009 (Table 2a).

Tables 3a-c further present observed total catch weight (mt), discard weight (mt), and the percent discarded for all species by depth interval (0-10, 11-20, >20 fathoms) and state, using calendar year 2009 data only (Tables 3a-b) and January through April 2010 (Table 3c). These depth intervals were employed in order to be consistent with methodology used in annual estimation of fleet-wide discard in nearshore groundfish fisheries. In both Oregon and California, black rockfish constituted the largest component of nearshore catch, and was caught primarily in the 0-10 and 11-20 fm depth intervals. Cabezon, kelp greenling, lingcod, and china rockfish also made up a large portion of observed catch in Oregon. On California nearshore vessels, lingcod, blue rockfish, brown rockfish, and gopher rockfish species were also commonly observed. In both states, total catch weight was greatest in the 11-20 fm depth interval. In 2009, 51% of Oregon's total observed catch and 70% of California's total observed catch came from this depth interval (11-20 fm). In comparison, observed catch in 0-10 fm represented 48% of the total in Oregon and 26% of the total in California. The smallest component of observed catch originated from the deepest depth interval (> 20 fm) for both states, 1% in Oregon and 4% in California.

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. Lingcod constituted the largest component of observed discard coastwide, and is under minimum size restrictions in the federal groundfish regulations. In Oregon, larger amounts of black rockfish, cabezon, kelp greenling, and blue

rockfish were also discarded; all of which are state-managed with two-month cumulative trip limits. In California, blue rockfish, kelp greenling, and gopher rockfish constituted the largest components of non-rebuilding species discard after lingcod, although some retention was recorded for each of these species. For rebuilding species, observed catch and discard of canary rockfish increased, yet yelloweye rockfish decreased relative to 2008.

Table 4 presents discard ratios and standard errors for the 2009 nearshore fixed gear fisheries by depth interval and management area. Species are grouped for ratio calculations according to Appendix B and all discard ratios are computed using retained nearshore species weight in the denominator.

Table 5 provides bycatch ratios for the 2009 nearshore fixed gear groundfish fisheries by depth interval and by federal management area (north and south of 40°10' N. latitude). These ratios are produced in order to inform projection modeling in the nearshore groundfish fishery that is conducted by the Groundfish Management Team (GMT) of the Pacific Fishery Management Council (PFMC). Bycatch ratios were computed as the total catch weight of rebuilding and nearshore groundfish species divided by the total retained weight of nearshore target species, as specified in Appendix B. To ensure adequate sample size for subsequent analysis of bycatch, data in the two deepest depth intervals were combined to create a single deep depth stratum (> 10 fm) in 2009. Effort in this depth range is traditionally low. Thus, bycatch ratios in deeper depth intervals could not be directly compared to 2008 report values. For canary rockfish, bycatch ratios increased from 2008 to 2009 in the shallowest strata (0-10 fm) north of 40°10' N. latitude, but decreased in this strata south of 40°10' N. latitude. Relative to 2008, the 2009 bycatch ratio for yelloweye rockfish decreased north of 40°10' N. latitude from 0-10 fm.

Bycatch ratios for rebuilding groundfish species are also calculated by state and represented graphically in Figure 1 to provide perspective on bycatch trends over time by state. For canary rockfish, bycatch ratios in both Oregon and California increased steadily from 2003 onward, until 2008 when there was a slight decrease. In 2009, the Oregon canary rockfish bycatch ratio continued to decrease however, it increased in California during 2009 to the highest rate observed in this state's fishery thus far. The bocaccio bycatch rate in California during 2009 was also the highest observed thus far. For yelloweye rockfish, bycatch ratios have fluctuated between years, but showed a steadily increasing trend in Oregon from 2005 through 2008. However, a sharp decline in the yelloweye rockfish bycatch ratio was observed in 2009 relative to the three prior years. Figure 2 presents the 2009 bycatch ratios for canary and yelloweye rockfish by depth strata. For canary rockfish, bycatch continues to be highest in the deepest depth stratum (> 20 fm), where retained catch of nearshore target species and fishing effort is lowest. For yelloweye rockfish, bycatch in the deepest depth stratum (> 20 fm) was greatly reduced relative to 2008, and the majority of bycatch in 2009 occurred in the mid-depth stratum (11-20 fm).

## **Biological Data Collection and Summary**

WCGOP observers collect four major 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 nearshore fixed gear fisheries for non-protected fish resources from September 2003 through April 2010 are summarized in Table 6. The length frequency distributions of discarded groundfish rebuilding species from biological data are presented for the nearshore fixed gear groundfish fisheries in Figure 3. Figure 4 presents length frequency distributions of discarded non-rebuilding groundfish species.

For protected resources, including any species regulated under the Endangered Species Act (ESA), additional types of biological data are collected whenever possible. It is the policy of the WCGOP to collect lengths, photographs, and tissue samples from all green sturgeon observed, as well as sexes and fin ray samples from all dead individuals.

For salmon, observers record length and sex for all individuals, as well as record weight, note presence or absence of an adipose fin, and collect scales and snouts for a subsample.

Table 7 summarizes the biological data for protected fish resources collected by observers in the nearshore fixed gear groundfish fisheries from September 2003 through April 2010. Observers sampled a total of 3 chinook salmon and 4 coho salmon across all years.

## Summary

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

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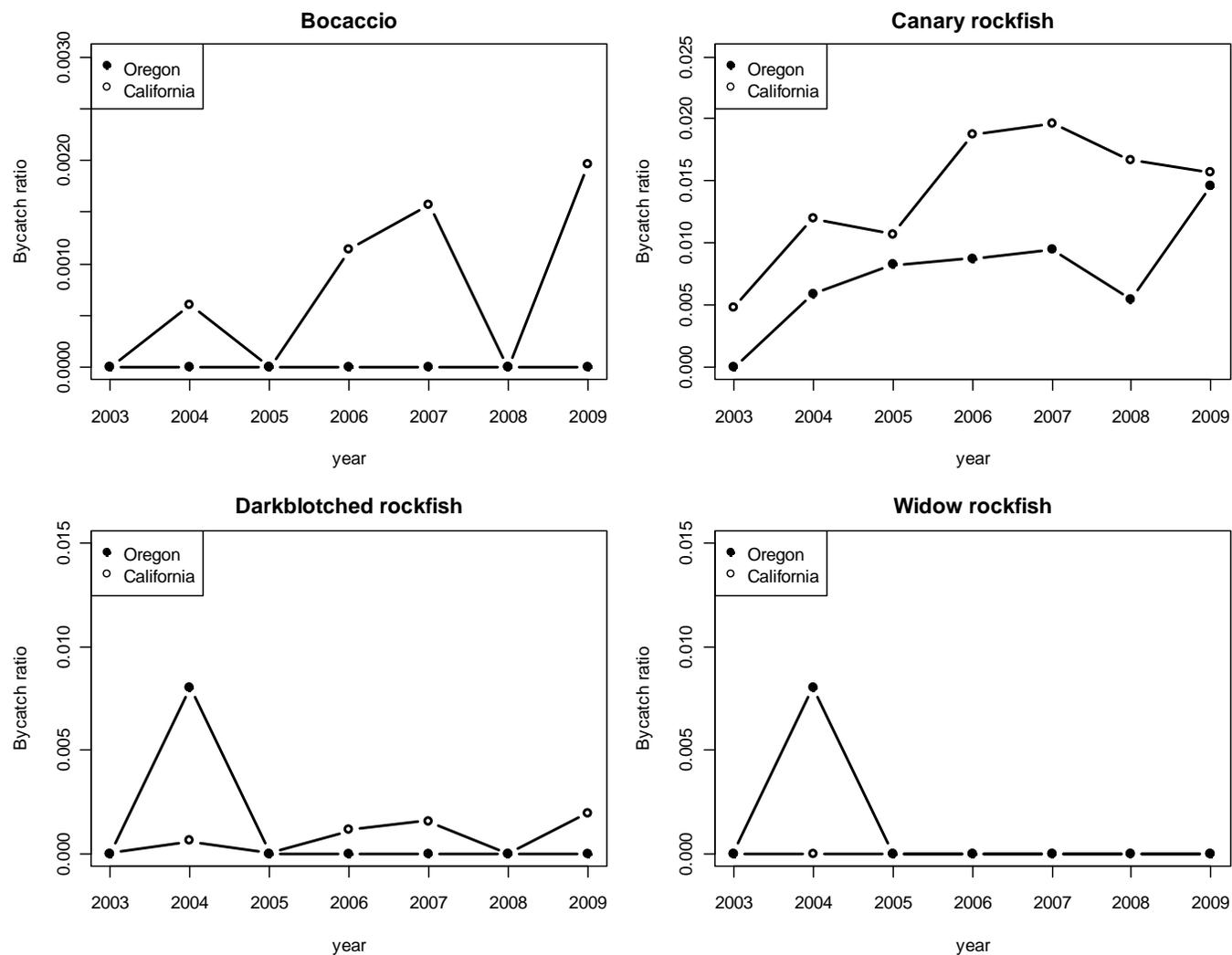
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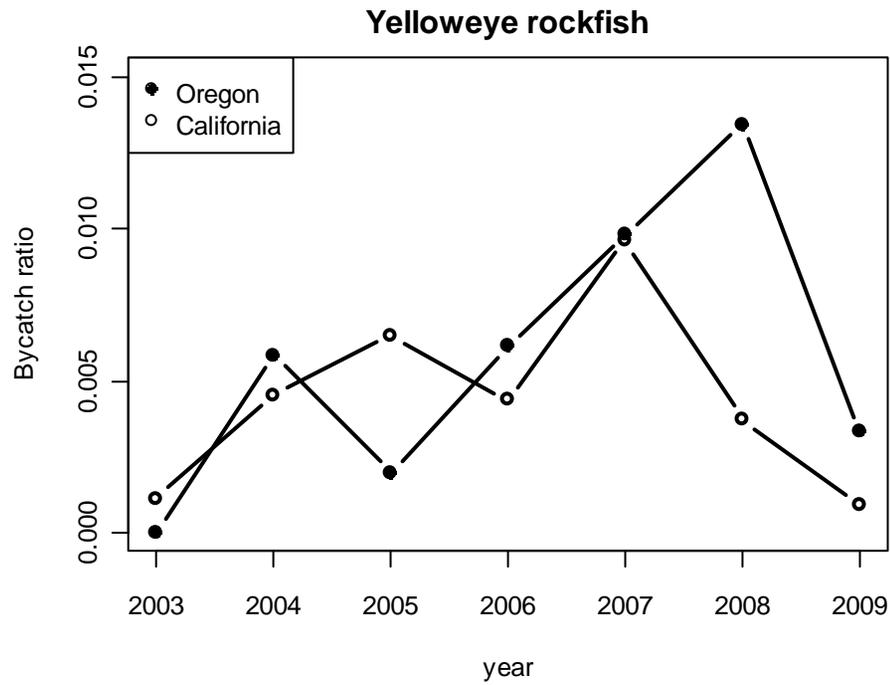
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## Figures

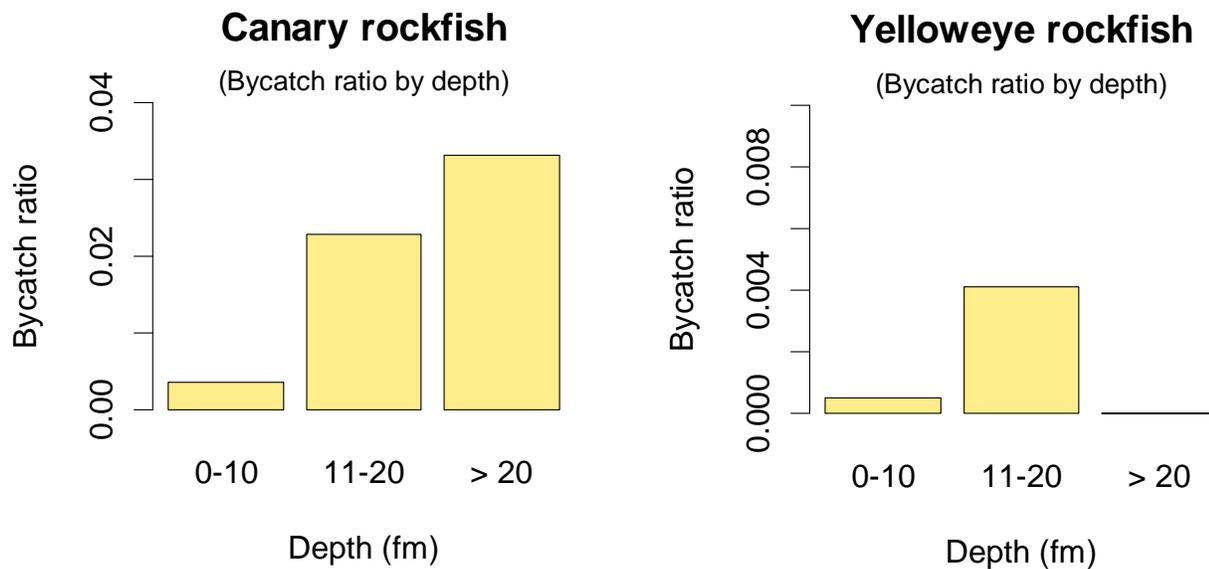
**Figure 1.** Bycatch ratios over time for groundfish rebuilding species observed in the nearshore fixed gear groundfish fishery in Oregon (solid circles) and California (outlined circles). Bycatch ratios were computed as the observed total catch of rebuilding species divided by the weight of retained nearshore target species (see Appendix B).



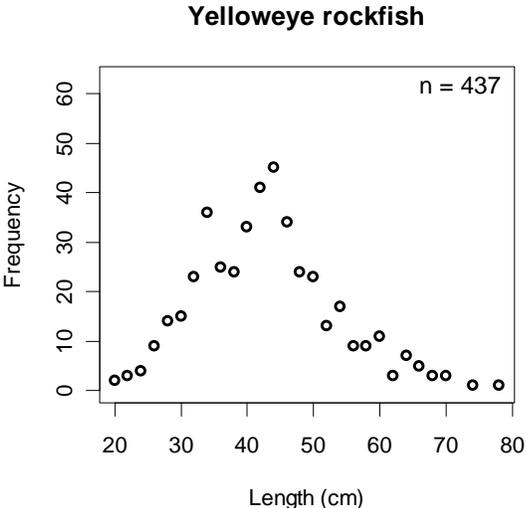
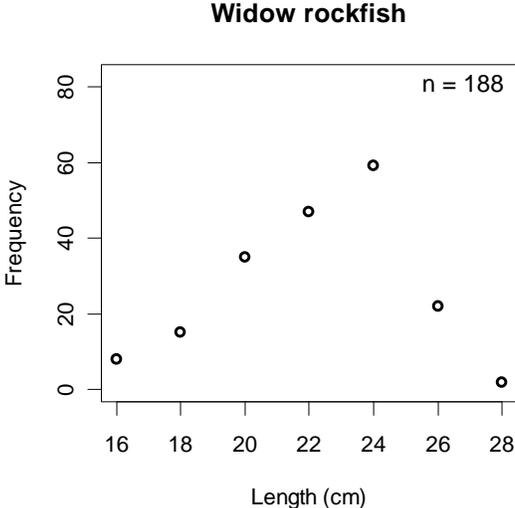
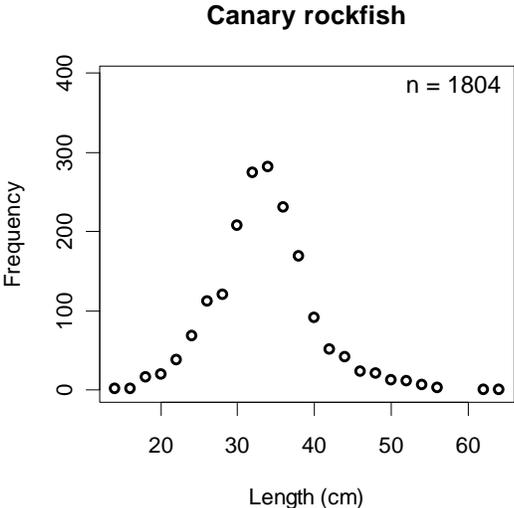
**Figure 1 continued.** Bycatch ratios over time for groundfish rebuilding species observed in the nearshore fixed gear groundfish fishery in Oregon (solid circles) and California (outlined circles). Bycatch ratios were computed as the observed total catch of rebuilding species divided by the weight of retained nearshore target species (see Appendix B).



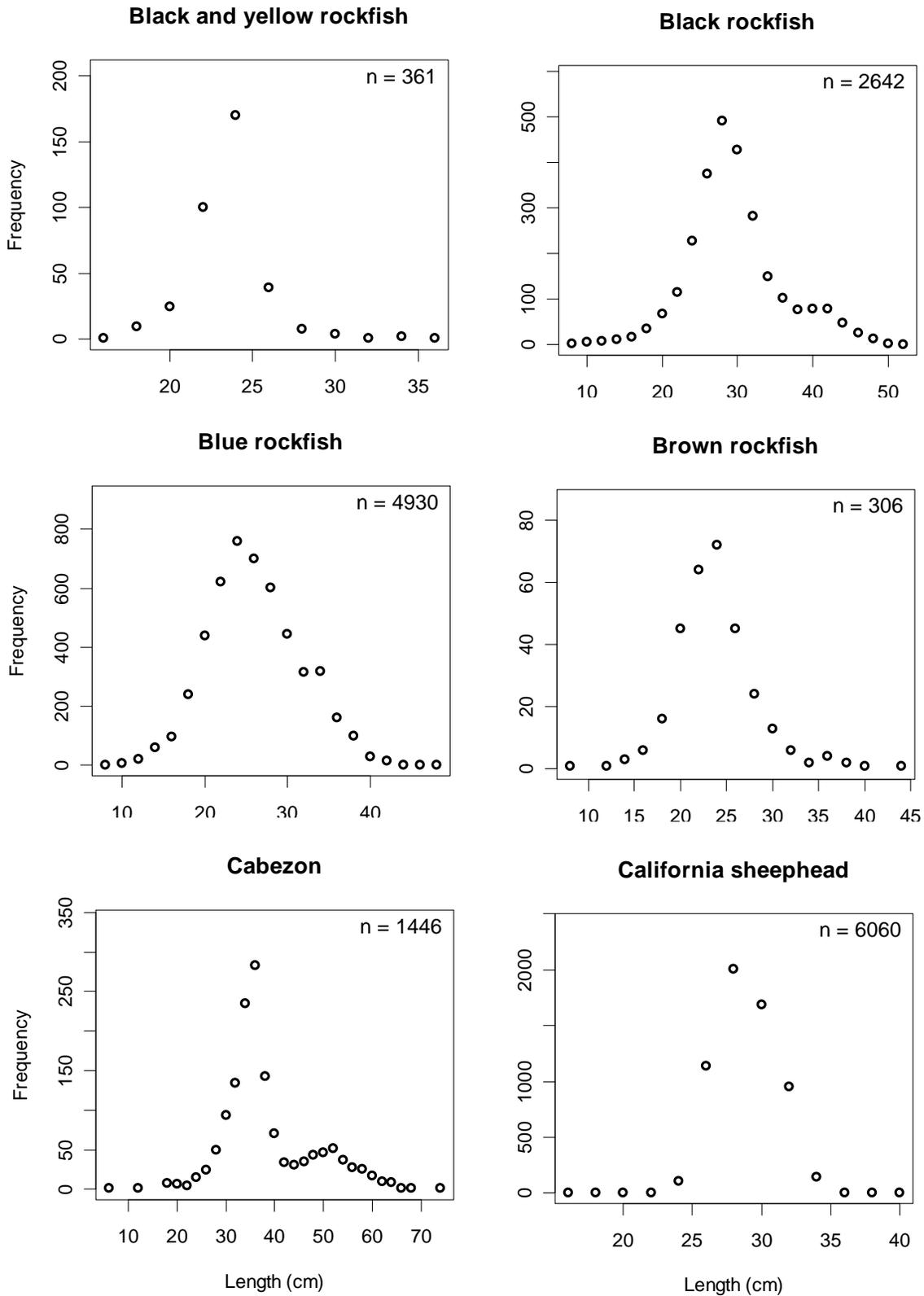
**Figure 2.** Bycatch ratios by depth interval observed in the 2009 nearshore fixed gear groundfish fishery (Oregon and California) for canary rockfish (left) and yelloweye rockfish (right). Bycatch ratios were computed as the observed total catch weight of rebuilding species divided by the weight of retained nearshore target species (see Appendix B).



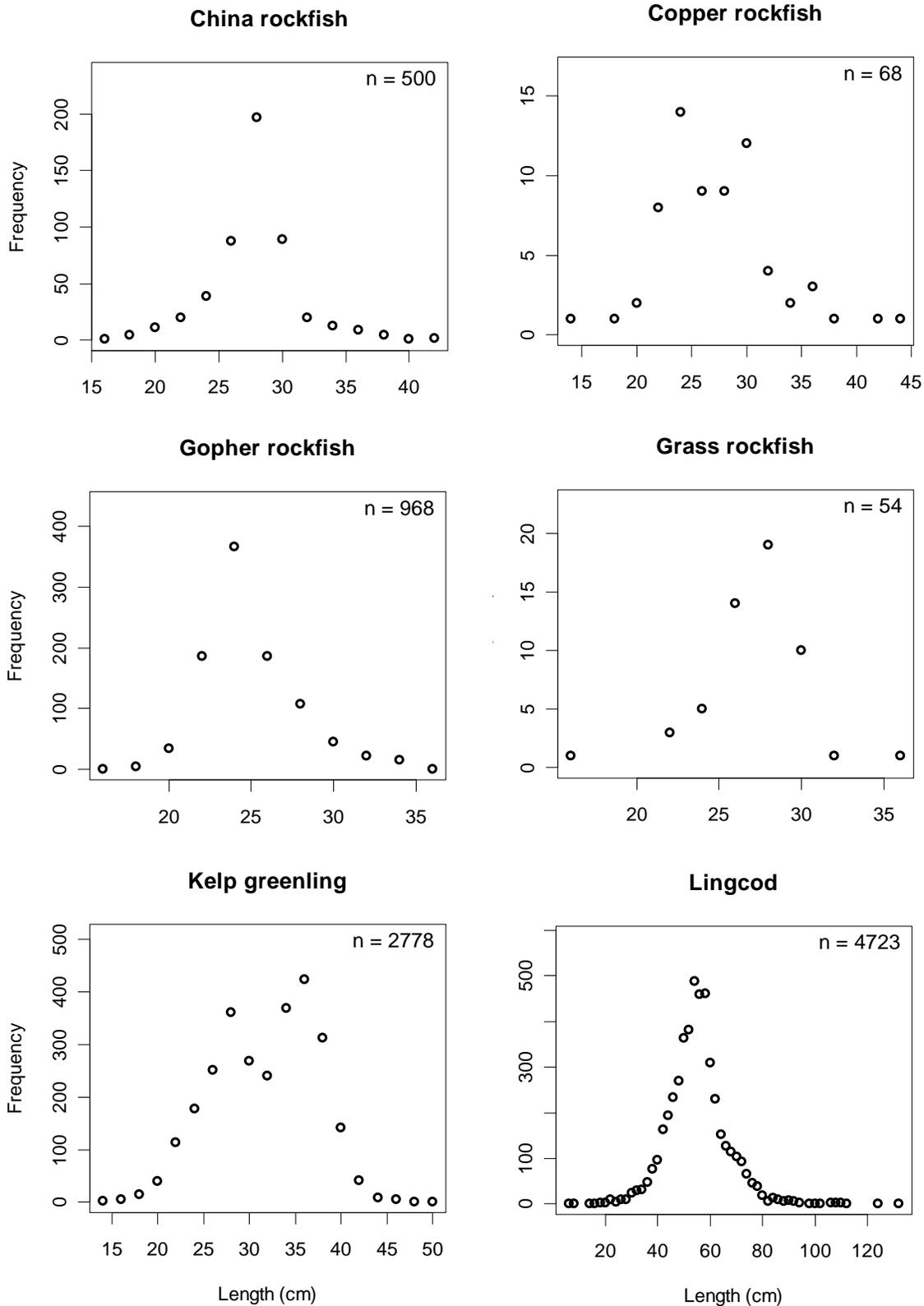
**Figure 3.** Length frequency distributions of discarded groundfish rebuilding species observed in the nearshore fixed gear groundfish fishery from September 2003 - April 2010.



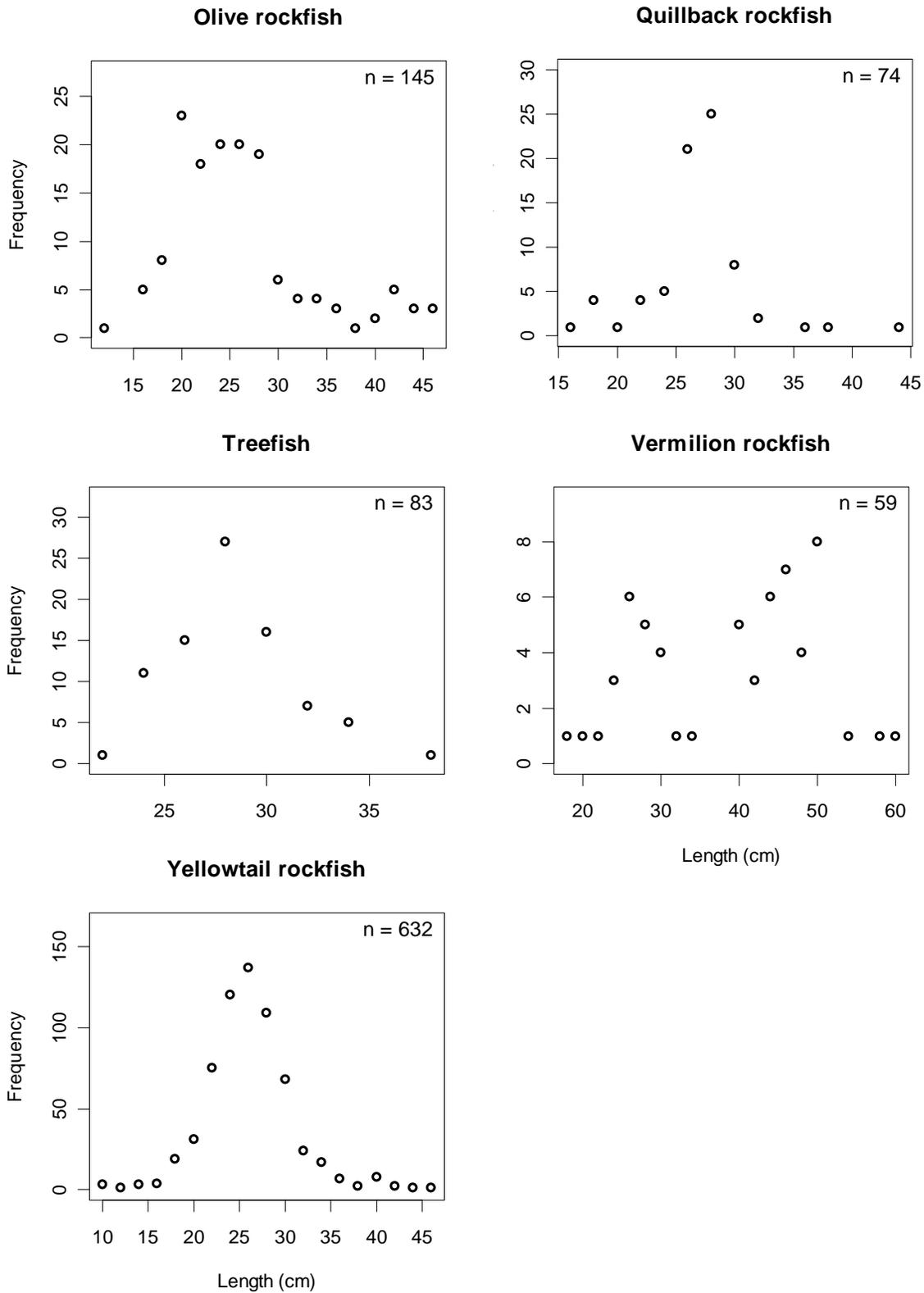
**Figure 4.** Length frequency distributions of discarded (non-rebuilding) groundfish species observed in the nearshore fixed gear groundfish fishery from September 2003 - April 2010. Length frequency distributions are provided for species for which there are at least 50 observations.



**Figure 4 continued.** Length frequency distributions of discarded (non-rebuilding) groundfish species observed in the nearshore fixed gear groundfish fishery from September 2003 - April 2010. Length frequency distributions are provided for species for which there are at least 50 observations.



**Figure 4 continued.** Length frequency distributions of discarded (non-rebuilding) groundfish species observed in the nearshore fixed gear groundfish fishery from September 2003 - April 2010. Length frequency distributions are provided for species for which there are at least 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 1.** Total trips, sets, vessels and nearshore species landings observed in the nearshore fixed gear groundfish fisheries in 2009 (above) and from January through April 2010 (below). Coverage rates (far-right column) for each port group and state are computed as the proportion of total nearshore species landings that were observed. A list of designated nearshore species is provided in Appendix B. Data are combined as needed to ensure confidentiality.

	Port Group	Number of observed trips	Number of observed sets	Number of observed vessels	Observed nearshore species landings (mt)	Total nearshore species landings (mt)	% of nearshore species landings observed
2009	Bellingham	--	--	--	--	--	--
	Neah Bay	--	--	--	--	--	--
	Astoria	52	99	12	4.8	45.6	11%
	Newport						
	Coos Bay						
	Crescent City **	142	179	44	17.4	283.9	6%
	Eureka						
	Fort Bragg	32	54	9	1.6	26.0	6%
	San Francisco						
	Monterey	11	14	6	0.5	79.9	1%
	Morro Bay						
	Santa Barbara	--	--	--	--	21.3	--
	Los Angeles	7	12	3	0.2	27.4	1%
	Hook-and-line gear	244	328	73	23.8	444.6	5%
	Pot gear	*	*	*	*	39.5	*
Oregon	152	226	45	17.1	224.4	8%	
California	92	132	28	7.4	259.6	3%	
Coastwide	244	358	74	24.5	484.0	5%	
Jan - Apr 2010	Bellingham	--	--	--	--	--	--
	Neah Bay	--	--	--	--	--	--
	Astoria	16	25	8	1.2	3.7	33%
	Newport						
	Coos Bay	--	--	--	--	1.1	--
	Crescent City **	10	16	6	1.0	31.3	3%
	Eureka	--	--	--	--	*	--
	Fort Bragg	--	--	--	--	2.6	--
	San Francisco	--	--	--	--	0.3	--
	Monterey	--	--	--	--	0.6	--
	Morro Bay	--	--	--	--	7.8	--
	Santa Barbara	--	--	--	--	4.5	--
	Los Angeles	--	--	--	--	6.8	--
	Hook-and-line gear	26	37	14	2.1	50.3	4%
	Pot gear	*	*	*	*	8.6	*
Coastwide	26	41	14	2.2	58.9	4%	

\* Not reported due to confidentiality.

\*\* The Crescent City port group includes ports in both Oregon and California.

Note: Sets for which there was no gear type recorded were excluded when summarizing coverage by gear type.

**Table 2a.** Observed catch weight (mt), discard weight (mt) and percent discarded in the 2009 nearshore fixed gear groundfish fishery by state. There were not sufficient data to report discard of nearshore vessels by gear type.

	Oregon			California		
	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded
<b>Rebuilding species</b>						
Bocaccio	--	--	--	0.013	--	0.0%
Canary rockfish	0.203	0.203	100.0%	0.105	0.105	100.0%
Widow rockfish	--	--	--	0.005	0.001	13.0%
Yelloweye rockfish	0.046	0.046	100.0%	0.006	0.006	100.0%
<b>Non-rebuilding species</b>						
Black-and-yellow rockfish	0.001	--	0.0%	0.055	0.005	8.7%
Black rockfish	7.951	0.588	7.4%	4.673	0.069	1.5%
Blue rockfish	0.606	0.259	42.7%	0.650	0.123	18.8%
Cabezon	2.656	0.433	16.3%	0.161	0.037	22.9%
California scorpionfish	--	--	--	0.179	0.021	11.6%
Flatfish	0.001	--	0.0%	0.006	0.002	39.5%
Butter sole		--			--	
Pacific sanddab		--			0.001	
Rock sole		--			0.000	
Sand sole		--			0.001	
Gopher rockfish	0.004	--	0.0%	0.340	0.092	27.1%
Grass rockfish	0.001	--	0.0%	0.007	--	0.0%
Greenspotted rockfish	--	--	--	0.002	--	0.0%
Greenstriped rockfish	--	--	--	0.001	0.001	100.0%
Kelp greenling	1.766	0.414	23.5%	0.144	0.121	84.2%
Leopard shark	--	--	--	0.026	0.004	13.8%
Lingcod	2.980	1.330	44.6%	0.779	0.317	40.7%
Nearshore rockfish	0.990	0.052	5.2%	0.765	0.040	5.2%
Brown rockfish		--			0.014	
Calico rockfish		--			0.000	
China rockfish		0.040			0.025	
Copper rockfish		0.002			0.000	
Quillback rockfish		0.009			0.000	
Unspecified nearshore rockfish		--			--	
Olive rockfish	--	--	--	0.026	0.007	26.7%
Red Irish lord sculpin	0.005	0.003	52.7%	--	--	--
Petrable sole	--	--	--	0.002	--	0.0%
Rosy rockfish	--	--	--	0.003	--	0.0%
Sablefish	--	--	--	0.179	--	0.0%
Shelf rockfish	0.331	0.008	2.4%	0.171	0.003	1.8%
Flag rockfish		--			--	
Greenblotched rockfish		--			--	
Speckled rockfish		--			--	
Starry rockfish		--			--	
Tiger rockfish		--			--	
Vermilion rockfish		0.008			0.003	
Unspecified shelf rockfish		0.000			--	

Table 2a continued.

	Oregon			California		
	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded
<b>Non-rebuilding species (cont.)</b>						
Slope rockfish	--	--	--	0.066	--	0.0%
Blackgill rockfish		--			--	
Unspecified slope rockfish		--			--	
Spiny dogfish	0.004	0.004	100.0%	0.076	0.076	100.0%
Spotted ratfish	--	--	--	0.003	0.003	100.0%
Squarespot rockfish	--	--	--	0.001	--	0.0%
Starry flounder	--	--	--	0.004	--	0.0%
Longspine thornyhead	0.001	--	0.0%	--	--	--
Treefish	--	--	--	0.014	0.000	3.2%
Unspecified greenling	0.000	0.000	100.0%	--	--	--
Yellowtail rockfish	0.058	0.012	20.6%	0.073	0.014	19.7%
<b>Non-groundfish species</b>						
Barred sand bass	--	--	--	0.002	0.002	100.0%
Bat ray	--	--	--	0.032	0.021	64.8%
Black surfperch	--	--	--	0.002	0.002	100.0%
Brown smoothhound shark	--	--	--	0.019	0.008	43.5%
Buffalo sculpin	0.002	0.001	26.3%	0.002	0.002	100.0%
California halibut	--	--	--	0.049	0.018	36.7%
California sheephead	--	--	--	0.036	0.015	41.5%
Dungeness crab	0.150	0.150	100.0%	0.001	0.001	100.0%
Hagfish (unidentified)	--	--	--	0.001	0.001	100.0%
Heart crab	0.000	0.000	100.0%	--	--	--
Jack smelt	--	--	--	0.000	0.000	100.0%
Jellyfish Unid	0.001	0.001	100.0%	--	--	--
Kelp Bass	--	--	--	0.010	0.010	100.0%
King (Chinook) salmon	0.008	0.008	100.0%	--	--	--
Mackerel (unidentified)	--	--	--	0.007	--	0.0%
Ocean whitefish	--	--	--	0.003	--	0.0%
Octopus (unidentified)	0.079	0.021	26.3%	0.001	0.001	100.0%
Other nongroundfish	0.122	--	0.0%	0.001	--	0.0%
Pacific halibut	0.080	0.080	100.0%	--	--	--
Pacific mackerel	--	--	--	0.004	--	0.0%
Pacific rock crab	--	--	--	0.001	0.001	100.0%
Pacific sardine	--	--	--	0.001	0.001	100.0%
Rainbow surfperch	--	--	--	0.000	0.000	100.0%
Red rock crab	--	--	--	0.007	0.007	100.0%
Sculpin (unidentified)	0.050	0.049	98.5%	0.065	0.065	100.0%
Sea cucumber (unidentified)	0.006	0.006	100.0%	0.001	0.001	100.0%
Shark (unidentified)	--	--	--	0.002	0.002	100.0%
Silver (Coho) salmon	0.017	0.017	100.0%	--	--	--
Squid (unidentified)	0.005	0.005	100.0%	--	--	--
Striped surfperch	0.001	0.001	41.7%	--	--	--
Surfperch (unidentified)	0.001	0.001	100.0%	0.000	0.000	32.9%
Swell shark	--	--	--	0.006	0.006	100.0%
White croaker	--	--	--	0.003	0.000	9.8%
Wolf-eel	0.024	0.021	86.8%	0.024	0.024	100.0%

**Table 2b.** Observed catch weight (mt), discard weight (mt) and percent discarded in the nearshore fixed gear groundfish fishery from January through April 2010. There were not sufficient data to report nearshore catch by state or gear type in the first four months of 2010.

	<b>Oregon and California</b>		
	Total catch (mt)	Discard (mt)	Total % discarded
<b>Rebuilding species</b>			
Bocaccio	--	--	--
Canary rockfish	0.015	0.015	100.0%
Widow rockfish	--	--	--
Yelloweye rockfish	0.004	0.004	100.0%
<b>Non-rebuilding species</b>			
Black rockfish	1.353	0.022	1.6%
Blue rockfish	0.232	0.078	33.7%
Cabazon	0.513	0.039	7.5%
Kelp greenling	0.165	0.019	11.3%
Lingcod	0.464	0.462	99.6%
Nearshore rockfish	0.099	0.013	13.1%
China rockfish		0.011	
Copper rockfish		0.000	
Quillback rockfish		0.002	
Shelf rockfish	0.045	--	0.0%
Tiger rockfish		--	
Vermilion rockfish		--	
Starry skate	0.004	--	0.0%
Yellowtail rockfish	0.008	0.007	88.9%
<b>Non-groundfish species</b>			
Dungeness crab	0.002	0.002	100.0%
Hermit crab (unidentified)	0.000	0.000	100.0%
Octopus (unidentified)	0.053	0.016	29.4%
Rock greenling	0.002	--	0.0%
Sculpin (unidentified)	0.009	0.009	100.0%
Sea cucumber (unidentified)	0.001	0.001	100.0%
Urchin (unidentified)	0.001	0.001	100.0%

**Table 3a.** Observed catch weight (mt), discard weight (mt) and percent discarded from observed Oregon nearshore fixed gear groundfish vessels in 2009 by depth.

Oregon 2009 (all gears)	Depth intervals								
	0 - 10 fm			11 - 20 fm			> 20 fm		
	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded
<b>Rebuilding species</b>									
Canary rockfish	0.029	0.029	100.0%	0.161	0.161	100.0%	0.012	0.012	100.0%
Yelloweye rockfish	0.005	0.005	100.0%	0.042	0.042	100.0%	--	--	--
<b>Non-rebuilding species</b>									
Black-and-yellow rockfish	0.000	--	0.0%	0.001	--	0.0%	--	--	--
Black rockfish	4.256	0.344	8.1%	3.609	0.244	6.8%	0.086	--	0.0%
Blue rockfish	0.175	0.069	39.2%	0.410	0.185	45.2%	0.021	0.005	22.4%
Cabezon	1.167	0.174	14.9%	1.461	0.254	17.4%	0.028	0.005	16.1%
Flatfish	0.000	--	0.0%	0.000	--	0.0%	--	--	--
Butter sole		--			--			--	
Rock sole		--			--			--	
Gopher rockfish	0.002	--	0.0%	0.002	--	0.0%	--	--	--
Grass rockfish	0.001	--	0.0%	--	--	--	--	--	--
Kelp greenling	1.186	0.305	25.7%	0.574	0.107	18.7%	0.006	0.002	36.8%
Lingcod	1.202	0.629	52.4%	1.740	0.680	39.1%	0.038	0.020	52.2%
Nearshore rockfish	0.321	0.014	4.5%	0.644	0.037	5.8%	0.025	--	0.0%
China rockfish		0.014			0.026			--	
Copper rockfish		--			0.002			--	
Quillback rockfish		0.000			0.009			--	
Red Irish lord sculpin	0.001	0.001	100.0%	0.004	0.001	35.5%	--	--	--
Shelf rockfish	0.114	0.003	2.3%	0.208	0.005	2.5%	0.010	--	0.0%
Tiger rockfish		--			--			--	
Vermilion rockfish		0.003			0.005			--	
Unspecified shelf rockfish		0.000			--			--	
Spiny dogfish shark	--	--	--	0.004	0.004	100.0%	--	--	--
Longspine thornyhead	--	--	--	0.001	--	0.0%	--	--	--
Unspecified greenling	0.000	0.000	100.0%	--	--	--	--	--	--
Yellowtail rockfish	0.008	0.003	35.4%	0.050	0.009	18.2%	--	--	--

Table 3a continued.

Oregon 2009 (all gears)	Depth intervals								
	0 - 10 fm			11 - 20 fm			> 20 fm		
	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded
<b>Non-groundfish species</b>									
Buffalo sculpin	0.002	--	0.0%	0.001	0.001	100.0%	--	--	--
Dungeness crab	0.032	0.032	100.0%	0.118	0.118	100.0%	--	--	--
Heart crab	0.000	0.000	100.0%	--	--	--	--	--	--
Jellyfish (unidentified)	--	--	--	0.001	0.001	100.0%	--	--	--
King (Chinook) salmon	--	--	--	0.008	0.008	100.0%	--	--	--
Octopus (unidentified)	0.016	--	0.0%	0.064	0.021	32.9%	--	--	--
Other nongroundfish	0.119	--	0.0%	0.002	--	0.0%	--	--	--
Pacific halibut	--	--	--	0.080	0.080	100.0%	--	--	--
Sculpin (unidentified)	0.027	0.027	98.3%	0.023	0.023	98.7%	--	--	--
Sea cucumber (unidentified)	0.002	0.002	100.0%	0.004	0.004	100.0%	0.001	0.001	100.0%
Silver (Coho) salmon	0.012	0.012	100.0%	0.004	0.004	100.0%	--	--	--
Squid (unidentified)	--	--	--	0.005	0.005	100.0%	--	--	--
Striped surfperch	0.001	0.001	41.7%	--	--	--	--	--	--
Surfperch (unidentified)	0.001	0.001	100.0%	--	--	--	--	--	--
Wolf-eel	--	--	--	0.024	0.021	86.8%	--	--	--

**Table 3b.** Observed catch weight (mt), discard weight (mt) and percent discarded from observed California nearshore fixed gear groundfish vessels in 2009 by depth.

California 2009 (all gears)	Depth intervals								
	0 - 10 fm			11 - 20 fm			> 20 fm		
	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded
<b>Rebuilding species</b>									
Bocaccio	--	--	--	--	--	--	0.013	--	0.0%
Canary rockfish	0.002	0.002	100.0%	0.103	0.103	100.0%	--	--	--
Widow rockfish	--	--	--	0.005	0.001	13.0%	--	--	--
Yelloweye rockfish	--	--	--	0.006	0.006	100.0%	--	--	--
<b>Non-rebuilding species</b>									
Black-and-yellow rockfish	0.048	0.005	10.1%	--	--	--	0.007	--	0.0%
Black rockfish	1.194	0.025	2.1%	3.479	0.044	1.3%	--	--	--
Blue rockfish	0.046	0.019	42.5%	0.604	0.103	17.0%	0.000	0.000	100.0%
Cabezon	0.079	0.023	28.9%	0.071	0.014	19.7%	0.011	0.000	0.0%
California scorpionfish	0.000	--	0.0%	--	--	--	0.179	0.021	11.6%
Flatfish	0.002	0.000	11.6%	0.003	0.002	69.7%	0.001	--	0.0%
Pacific Sanddab		--			0.001			--	
Rock Sole		--			0.000			--	
Sand Sole		0.000			0.001			--	
Gopher rockfish	0.162	0.020	12.1%	0.172	0.073	42.2%	0.006	--	0.0%
Grass rockfish	0.004	--	0.0%	--	--	--	0.003	--	0.0%
Greenspotted rockfish	--	--	--	--	--	--	0.002	--	0.0%
Greenstriped rockfish	--	--	--	--	--	--	0.001	0.001	100.0%
Kelp greenling	0.040	0.036	90.8%	0.098	0.085	87.0%	0.006	--	0.0%
Leopard shark	--	--	--	0.026	0.004	13.8%	--	--	--
Lingcod	0.252	0.094	37.1%	0.524	0.224	42.7%	0.003	--	0.0%
Nearshore rockfish	0.294	0.012	4.0%	0.471	0.028	5.9%	0.001	--	0.0%
Brown rockfish		0.009			0.005			--	
Calico rockfish		0.000			--			--	
China rockfish		0.002			0.022			--	
Copper rockfish		0.000			--			--	
Quillback rockfish		--			0.000			--	
Unspecified nearshore rockfish		--			--			--	
Olive rockfish	0.003	0.002	78.6%	0.023	0.004	19.5%	--	--	--
Petrale Sole	--	--	--	0.002	--	0.0%	--	--	--
Rosy rockfish	--	--	--	0.003	--	0.0%	0.000	--	0.0%
Sablefish	--	--	--	0.179	--	0.0%	--	--	--

Table 3b continued.

California 2009 (all gears)	Depth intervals								
	0 - 10 fm			11 - 20 fm			> 20 fm		
	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded
<b>Non-rebuilding species (cont.)</b>									
Shelf rockfish	0.023	0.001	6.0%	0.085	0.002	1.9%	0.062	--	0.0%
Flag rockfish		--			--			--	
Greenblotched rockfish		--			--			--	
Speckled rockfish		--			--			--	
Starry rockfish		--			--			--	
Vermilion rockfish		0.001			0.002			--	
Unspecified shelf rockfish		--			--			--	
Slope rockfish	--	--	--	0.066	--	0.0%	--	--	--
Blackgill rockfish		--			--			--	
Spiny dogfish	0.026	0.026	100.0%	0.050	0.050	100.0%	--	--	--
Spotted ratfish	--	--	--	0.003	0.003	100.0%	--	--	--
Squarespot rockfish	--	--	--	--	--	--	0.001	--	0.0%
Starry flounder	--	--	--	0.004	--	0.0%	--	--	--
Treefish	0.009	--	0.0%	0.005	--	0.0%	0.001	0.000	67.1%
Yellowtail rockfish	0.002	0.001	27.5%	0.071	0.014	19.5%	--	--	--
<b>Non-groundfish species</b>									
Barred sand bass	0.002	0.002	100.0%	0.001	0.001	100.0%	--	--	--
Bat ray	0.015	0.004	24.2%	0.017	0.017	100.0%	--	--	--
Black surfperch	0.001	0.001	100.0%	0.001	0.001	100.0%	--	--	--
Brown smoothhound shark	0.002	--	0.0%	0.017	0.008	47.5%	--	--	--
Buffalo sculpin	0.000	0.000	100.0%	0.001	0.001	100.0%	--	--	--
California halibut	0.045	0.018	40.4%	0.005	--	0.0%	--	--	--
California sheephead	0.009	0.004	48.1%	0.026	0.010	39.1%	--	--	--
Dungeness crab	0.000	0.000	100.0%	0.001	0.001	100.0%	--	--	--
Hagfish (unidentified)	--	--	--	0.001	0.001	100.0%	--	--	--
Jack smelt	--	--	--	0.000	0.000	100.0%	--	--	--
Kelp bass	0.006	0.006	100.0%	0.004	0.004	100.0%	--	--	--
Mackerel (unidentified)	0.007	--	0.0%	--	--	--	--	--	--

Table 3b continued.

California 2009 (all gears)	Depth intervals								
	0 - 10 fm			11 - 20 fm			> 20 fm		
	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded
<b>Non-rebuilding species (cont.)</b>									
Ocean whitefish	--	--	--	0.001	--	0.0%	0.002	--	0.0%
Octopus (unidentified)	0.000	0.000	100.0%	0.000	0.000	100.0%	--	--	--
Other nongroundfish	--	--	--	--	--	--	0.001	--	0.0%
Pacific mackerel	0.004	--	0.0%	--	--	--	--	--	--
Pacific rock crab	0.001	0.001	100.0%	--	--	--	--	--	--
Pacific sardine	0.001	0.001	100.0%	--	--	--	--	--	--
Rainbow surfperch	0.000	0.000	100.0%	0.000	0.000	100.0%	--	--	--
Red rock crab	0.005	0.005	100.0%	0.002	0.002	100.0%	--	--	--
Sculpin (unidentified)	0.010	0.010	100.0%	0.032	0.032	100.0%	0.023	0.023	100.0%
Sea cucumber (unidentified)	0.000	0.000	100.0%	0.000	0.000	100.0%	--	--	--
Shark (unidentified)	--	--	--	0.002	0.002	100.0%	--	--	--
Surfperch (unidentified)	--	--	--	--	--	--	0.000	0.000	32.9%
Swell shark	0.006	0.006	100.0%	--	--	--	--	--	--
White croaker	0.002	0.000	13.9%	0.001	--	0.0%	--	--	--
Wolf-eel	--	--	--	0.024	0.024	100.0%	--	--	--

**Table 3c.** Observed catch weight (mt), discard weight (mt) and percent discarded from observed nearshore fixed gear groundfish vessels from January through April of 2010. Data are reported coastwide to ensure confidentiality.

Oregon & California Jan - Apr 2010 (all gears)	Depth intervals					
	0 - 10 fm			> 10 fm		
	Total catch (mt)	Discard (mt)	Total % discarded	Total catch (mt)	Discard (mt)	Total % discarded
<b>Rebuilding species</b>						
Bocaccio	--	--	--	--	--	--
Canary rockfish	0.002	0.002	100.0%	0.012	0.012	100.0%
Widow rockfish	--	--	--	--	--	--
Yelloweye rockfish	--	--	--	0.004	0.004	100.0%
<b>Non-rebuilding species</b>						
Black rockfish	0.122	0.002	1.7%	1.231	0.020	1.6%
Blue rockfish	0.020	0.006	30.6%	0.212	0.072	34.0%
Cabazon	0.115	0.009	7.7%	0.398	0.030	7.5%
Kelp greenling	0.073	0.006	8.6%	0.092	0.012	13.5%
Lingcod	0.133	0.133	100.0%	0.331	0.329	99.4%
Nearshore rockfish	0.025	0.002	8.7%	0.074	0.011	14.5%
China rockfish		0.002			0.009	
Copper rockfish		--			0.000	
Quillback rockfish		--			0.002	
Shelf rockfish	0.015	--	0.0%	0.030	--	0.0%
Tiger rockfish		--			--	
Vermilion rockfish		--			--	
Starry skate	--	--	--	0.004	--	0.0%
Yellowtail rockfish	--	--	--	0.008	0.007	88.9%
<b>Non-groundfish species</b>						
Dungeness crab	--	--	--	0.002	0.002	100.0%
Rock greenling	--	--	--	0.002	--	0.0%
Hermit crab (unidentified)	--	--	--	0.000	0.000	100.0%
Octopus (unidentified)	0.005	0.005	100.0%	0.048	0.010	21.7%
Sculpin (unidentified)	0.003	0.003	100.0%	0.006	0.006	100.0%
Sea cucumber (unidentified)	0.000	0.000	100.0%	0.000	0.000	100.0%
Urchin (unidentified)	0.001	0.001	100.0%	--	--	--

**Table 4.** Discard ratios and standard errors from observed nearshore fixed gear groundfish vessels in in 2009 by groundfish management area. Ratios are computed as the observed discarded weight divided by the weight of retained nearshore species (see Appendix B) for all gears.

	Depth interval			
	0 - 10 fm		> 10 fm	
	Discard ratio	Standard error	Discard ratio	Standard error
<b>North of 40°10' N. lat.</b>				
<b>Rebuilding species</b>				
Canary rockfish	0.0044	0.1185	0.0226	0.1847
Widow rockfish	--	--	0.0001	0.0366
Yelloweye rockfish	0.0006	NA	0.0043	0.1203
<b>Non-rebuilding species</b>				
Black rockfish (South of 46°16' N. lat.)	0.0509	0.1000	0.0260	0.0563
Blue rockfish	0.0115	0.0609	0.0256	0.0726
Cabazon (Oregon)	0.0249	0.1008	0.0235	0.1333
Cabazon (California)	--	--	0.0006	0.0819
Kelp greenling	0.0442	0.1136	0.0116	0.0368
Lingcod (Washington/Oregon)	0.0899	0.2717	0.0637	0.1982
Lingcod (California)	0.0006	0.0569	0.0049	0.1562
Other greenling	0.0000	NA	--	--
Other minor nearshore rockfish	0.0021	0.0112	0.0037	0.0088
Other shelf rockfish	0.0004	0.0155	0.0006	0.0109
Spiny dogfish	--	--	0.0004	NA
Yellowtail rockfish	0.0005	0.0157	0.0021	0.0131
<b>Non-groundfish species</b>				
Buffalo sculpin	--	--	0.0001	NA
Dungeness crab	0.0045	0.1912	0.0107	0.4810
Other nongroundfish	0.0061	0.0544	0.0152	0.1067
Red Irish lord sculpin	0.0002	NA	0.0001	0.0480
<b>South of 40°10' N. lat.</b>				
<b>Rebuilding species</b>				
Canary rockfish	0.0004	NA	0.0035	0.0344
Yelloweye rockfish	--	--	0.0001	NA
<b>Non-rebuilding species</b>				
Black rockfish	0.0042	0.0344	0.0002	0.0037
Blue rockfish	0.0025	0.0298	0.0015	0.0119
Cabazon	0.0076	0.0651	0.0009	0.0138
California scorpionfish	--	--	0.0026	0.1046
Deeper nearshore rockfish	0.0040	0.0152	0.0010	0.0021
Gopher rockfish	0.0065	0.0401	0.0091	0.0389
Greenstriped rockfish	--	--	0.0001	NA
Kelp greenling	0.0104	0.0984	0.0084	0.0752
Lingcod	0.0298	0.1308	0.0212	0.0492
Other flatfish	0.0001	0.0066	0.0003	0.0051
Other groundfish	--	--	0.0008	0.0335
Other shelf rockfish	0.0005	0.0100	0.0000	0.0003
Shallow nearshore rockfish	0.0024	0.0212	0.0027	0.0251
Spiny dogfish	0.0088	0.4797	0.0062	0.1372
<b>Non-groundfish species</b>				
Buffalo sculpin	0.0001	NA	0.0002	0.0286
California halibut	0.0060	0.1248	--	--
California sheephead	0.0015	0.1961	0.0013	0.1819
Dungeness crab	0.0002	NA	0.0001	0.0073
Other nongroundfish	0.0117	0.0569	0.0145	0.0620

**Table 5.** Bycatch ratios for rebuilding and nearshore groundfish species in the 2009 nearshore fixed gear groundfish fishery. Bycatch ratios are computed as the observed total catch weight divided by the observed weight of retained nearshore target species (see Appendix B).

	Depth interval	
	0 - 10 fm	> 10 fm
	Bycatch ratio	Bycatch ratio
<b>North of 40°10' N. lat.</b>		
<b>Rebuilding species</b>		
Canary rockfish	0.0044	0.0226
Widow rockfish	--	0.0005
Yelloweye rockfish	0.0006	0.0043
<b>Nearshore species</b>		
Black rockfish (South of 46°16' N. lat.)	0.7698	0.6500
Blue rockfish	0.0290	0.0912
Cabazon (Oregon)	0.1667	0.1354
Cabazon (California)	--	0.0045
Kelp greenling	0.1700	0.0555
Other greenling	0.0000	--
Lingcod (Washington/Oregon)	0.1718	0.1616
Lingcod (California)	0.0044	0.0114
Other minor nearshore rockfish	0.0475	0.0669
Red Irish lord sculpin	0.0002	0.0003
<b>South of 40°10' N. lat.</b>		
<b>Rebuilding species</b>		
Bocaccio	--	0.0016
Canary rockfish	0.0004	0.0035
Yelloweye rockfish	--	0.0001
<b>Nearshore species</b>		
Black rockfish	0.0206	0.0029
Blue rockfish	0.0059	0.0041
Cabazon	0.0264	0.0041
California scorpionfish	0.0001	0.0223
California sheephead	0.0031	0.0033
Deeper nearshore rockfish	0.0984	0.0512
Gopher rockfish	0.0539	0.0222
Kelp greenling	0.0117	0.0092
Lingcod	0.0739	0.0502
Shallow nearshore rockfish	0.0180	0.0046

**Table 6.** Summary of the number of length measurements and the number of individual fish sexed by WCGOP observers in the nearshore fixed gear groundfish fishery 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/non-groundfish species with more than 10 observations.

	<b>Years available</b>	<b># lengths</b>	<b># sexes</b>
<b>Rebuilding species</b>			
Bocaccio	2004	2	0
Canary rockfish	2004 - Apr 2010	1804	2
Widow rockfish	2004 - 2009	188	0
Yelloweye rockfish	2004 - Apr 2010	437	0
<b>Non-rebuilding species / Non-groundfish</b>			
Black and yellow rockfish	2004 - 2009	361	2
Black rockfish	2004 - Apr 2010	2642	0
Blue rockfish	2004 - Apr 2010	4930	0
Brown Irish lord sculpin	2004, 2006	12	0
Brown rockfish	2004 - 2009	306	0
Cabazon	2004 - Apr 2010	1446	4
Calico rockfish	2004 - 2009	26	0
California scorpionfish	2004, 2009	39	0
California sheephead	2004 - 2009	6060	623
China rockfish	2004 - Apr 2010	500	2
Copper rockfish	2004 - Apr 2010	68	0
Dungeness crab	2007, 2009	22	22
Gopher rockfish	2004 - 2009	968	1
Grass rockfish	2004 - 2007	54	0
Kelp greenling	2004 - Apr 2010	2778	2365
Kelp rockfish	2004 - 2007	44	0
Lingcod	2004 - Apr 2010	4723	1
Olive rockfish	2004 - 2009	145	0
Quillback rockfish	2004 - Apr 2010	74	2
Red Irish lord sculpin	2005 - 2009	16	0
Rock greenling	2004	14	0
Rosethorn rockfish	2004 - 2008	18	0
Rosy rockfish	2004 - 2008	15	0
Treefish	2004 - 2007, 2009	83	0
Vermilion rockfish	2004 - 2009	59	0
White croaker	2004 - 2007, 2009	15	0
Yellowtail rockfish	2004 - Apr 2010	632	0

**Table 7.** Summary of biological data for protected fish resources collected by WCGOP observers in the nearshore fixed gear groundfish fishery from September 2003 through April 2010. The number of length measurements and the number of individuals sexed is reported for each year where data are available.

	<b># lengths</b>	<b># sexes</b>
<b>Salmon</b>		
Chinook salmon		
2004	2	0
2006	1	0
Coho salmon		
2004	2	0
2007	1	0
2009	1	0

## Appendix A

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### 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

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.

PacFIN Species ID	PacFIN Common Name	Species Group - North of 40° 10' N latitude	Species Group - South of 40° 10' N latitude	NS Species
ALBC	ALBACORE	Other nongroundfish	Other nongroundfish	
AKSK	ALASKA SKATE	Other non-FMP skate	Other non-FMP skate	
AMCK	ATKA MACKEREL	Other nongroundfish	Other nongroundfish	
APLC	ALASKA PLAICE	Other non-FMP flatfish	Other non-FMP flatfish	
ARR1	NOM. AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	
ARRA	AURORA ROCKFISH	Other slope rockfish	Other slope rockfish	
ART1	NOM. ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	
ARTH	ARROWTOOTH FLOUNDER	Arrowtooth flounder	Arrowtooth flounder	
ASKT	ALEUTIAN SKATE	Other nongroundfish	Other nongroundfish	
ASRK	PACIFIC ANGEL SHARK	Other nongroundfish	Other nongroundfish	
BABL	BLACK ABALONE	Other nongroundfish	Other nongroundfish	
BANK	BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	
BCAC	BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	
BCC1	NOM. BOCACCIO	Bocaccio (Remaining rockfish)	Bocaccio	
BCLM	BUTTER CLAM	Other nongroundfish	Other nongroundfish	
BGL1	NOM. BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	
BHAG	BLACK HAGFISH	Other nongroundfish	Other nongroundfish	
BISC	BROWN IRISH LORD	Brown Irish lord	Brown Irish lord	yes
BKCR	BLUE KING CRAB	Other nongroundfish	Other nongroundfish	
BLCK	BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLGL	BLACKGILL ROCKFISH	Other slope rockfish	Blackgill (Remaining rockfish)	
BLK1	NOM. BLACK ROCKFISH	Black rockfish	Black rockfish	yes
BLPT	BLACK EELPOUT	Other nongroundfish	Other nongroundfish	
BLSK	BLACK SKATE	Other non-FMP skate	Other non-FMP skate	
BLU1	NOM. BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BLUR	BLUE ROCKFISH	Blue rockfish	Blue rockfish	yes
BMCK	BULLET MACKEREL	Other nongroundfish	Other nongroundfish	
BMRL	BLUE MARLIN	Other nongroundfish	Other nongroundfish	
BMSL	BLUE OR BAY MUSSEL	Other nongroundfish	Other nongroundfish	
BNK1	NOM. BANK ROCKFISH	Other slope rockfish	Bank rockfish (Remaining rockfish)	
BRNZ	BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
BRW1	NOM. BROWN ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
BRWN	BROWN ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
BRZ1	NOM. BRONZESPOTTED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
BSCL	BUFFALO SCULPIN	Buffalo sculpin	Buffalo sculpin	yes
BSJK	BLACK SKIPJACK	Other nongroundfish	Other nongroundfish	
BSKT	BIG SKATE	Big skate	Big skate	
BSOL	BUTTER SOLE	Other flatfish	Other flatfish	
BSRK	BLUE SHARK	Other nongroundfish	Other nongroundfish	
BSRM	UNSP. BAIT SHRIMP	Other nongroundfish	Other nongroundfish	
BTCR	BAIRDI TANNER CRAB	Tanner crab	Tanner crab	
BTNA	BLUEFIN TUNA	Other nongroundfish	Other nongroundfish	
BTRY	BAT RAY	Other nongroundfish	Other nongroundfish	
BYEL	BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
BYL1	NOM. BLACK-AND-YELLOW ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
CBZ1	NOM. CABEZON	Cabezon	Cabezon	yes
CBZN	CABEZON	Cabezon	Cabezon	yes

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CEEL	SPOTTED CUSK-EEL	Other nongroundfish	Other nongroundfish	
CHL1	NOM. CALIFORNIA HALIBUT	California halibut	California halibut	
CHLB	CALIFORNIA HALIBUT	California halibut	California halibut	
CHN1	NOM. CHINA ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
CHNA	CHINA ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
CHNK	CHINOOK SALMON	Other nongroundfish	Other nongroundfish	
CHUM	CHUM SALMON	Other nongroundfish	Other nongroundfish	
CKLE	BASKET COCKLE	Other nongroundfish	Other nongroundfish	
CLC1	NOM. CALICO ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CLCO	CALICO ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CLP1	NOM. CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	
CLPR	CHILIPEPPER	Chilipepper (Remaining rockfish)	Chilipepper rockfish	
CMCK	CHUB MACKEREL	Other nongroundfish	Other nongroundfish	
CMEL	CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	
CML1	NOM. CHAMELEON ROCKFISH	Other shelf rockfish	Other shelf rockfish	
CMSL	CALIFORNIA MUSSEL	Other nongroundfish	Other nongroundfish	
CNR1	NOM. CANARY ROCKFISH	Canary rockfish	Canary rockfish	
CNRY	CANARY ROCKFISH	Canary rockfish	Canary rockfish	
COHO	COHO SALMON	Other nongroundfish	Other nongroundfish	
COP1	NOM. COPPER ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
COPP	COPPER ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
CPLN	CAPELIN	Other nongroundfish	Other nongroundfish	
CSKT	CALIFORNIA SKATE	California skate	California skate	
CSL1	NOM. CURLFIN SOLE	Other flatfish	Other flatfish	
CSLK	CALIFORNIA SLICKHEAD	Other nongroundfish	Other nongroundfish	
CSOL	CURLFIN SOLE	Other flatfish	Other flatfish	
CSRK	BROWN CAT SHARK	Other nongroundfish	Other nongroundfish	
CTRB	C-O SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
CUDA	PACIFIC BARRACUDA	Other nongroundfish	Other nongroundfish	
CWC1	NOM. COWCOD ROCKFISH	Other shelf rockfish	Cowcod	
CWCD	COWCOD ROCKFISH	Other shelf rockfish	Cowcod	
DARK	DARK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
DBR1	NOM. DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	
DBRK	DARKBLOTCHED ROCKFISH	Darkblotched rockfish	Darkblotched rockfish	
DCRB	DUNGENESS CRAB	Dungeness crab	Dungeness crab	
DFLT	UNSP. DEEP FLOUNDERS	Other flatfish	Other flatfish	
DOVR	DOVER SOLE	Dover sole	Dover sole	
DRDO	DORADO	Other nongroundfish	Other nongroundfish	
DSOL	DEEPSEA SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
DSRK	SPINY DOGFISH	Spiny dogfish	Spiny dogfish	
DTRB	DIAMOND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
DUSK	DUSKY ROCKFISH	Other groundfish	Other groundfish	
DVR1	NOM. DOVER SOLE	Dover sole	Dover sole	
DWRF	DWARF-RED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
EELS	UNSPECIFIED EELS	Other nongroundfish	Other nongroundfish	
EGL1	NOM. ENGLISH SOLE	English sole	English sole	
EGLS	ENGLISH SOLE	English sole	English sole	
ESTR	EASTERN OYSTER	Other nongroundfish	Other nongroundfish	
ETNA	BIGEYE TUNA	Other nongroundfish	Other nongroundfish	
EULC	EULACHON	Eulachon	Eulachon	
EURO	EUROPEAN OYSTER	Other nongroundfish	Other nongroundfish	
FLAG	FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FLG1	NOM. FLAG ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FNTS	FANTAIL SOLE	Other non-FMP flatfish	Other non-FMP flatfish	

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FRCK	FRECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
FSOL	FLATHEAD SOLE	Other flatfish	Other flatfish	
GABL	GREEN ABALONE	Other nongroundfish	Other nongroundfish	
GBAS	GIANT SEA BASS	Other nongroundfish	Other nongroundfish	
GBL1	NOM. GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
GBLC	GREENBLOTCHED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
GCLM	GAPER CLAM	Other nongroundfish	Other nongroundfish	
GDUK	GEODUCK	Other nongroundfish	Other nongroundfish	
GGRD	GIANT GRENADIER	Other nongroundfish	Other nongroundfish	
GKCR	GOLDEN KING CRAB	Other nongroundfish	Other nongroundfish	
GPH1	NOM. GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPHR	GOPHER ROCKFISH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
GPRW	GOLDEN PRAWN	Other nongroundfish	Other nongroundfish	
GRAS	GRASS ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
GRDR	UNSP. GRENADIERS	Grenadiers	Grenadiers	
GREN	PACIFIC GRENADIER	Grenadiers	Grenadiers	
GRS1	NOM. GRASS ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
GSP1	NOM. GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	
GSPT	GREENSPOTTED ROCKFISH	Greenspotted rockfish	Greenspotted rockfish	
GSQD	GIANT SQUID	Other nongroundfish	Other nongroundfish	
GSR1	NOM. GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	
GSRK	GREENSTRIPED ROCKFISH	Greenstriped rockfish	Greenstriped rockfish	
GSRM	GHOST SHRIMP	Other nongroundfish	Other nongroundfish	
GSTG	GREEN STURGEON	Other nongroundfish	Other nongroundfish	
GTRB	GREENLAND TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
HBRK	HALFBANDED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HCLM	HORSE CLAMS	Other nongroundfish	Other nongroundfish	
HLQN	HARLEQUIN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HNY1	NOM. HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HNYC	HONEYCOMB ROCKFISH	Other shelf rockfish	Other shelf rockfish	
HTRB	HORNYHEAD TURBOT	Other non-FMP flatfish	Other non-FMP flatfish	
ISRK	BIGEYE THRESHER SHARK	Other nongroundfish	Other nongroundfish	
JCLM	CALIFORNIA JACKKNIFE CLAM	Other nongroundfish	Other nongroundfish	
JMCK	JACK MACKEREL	Other nongroundfish	Other nongroundfish	
KFSH	GIANT KELPFISH	Other nongroundfish	Other nongroundfish	
KGL1	NOM. KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLP1	NOM. KELP ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
KLPG	KELP GREENLING	Kelp greenling	Kelp greenling	yes
KLPR	KELP ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish	yes
KMKA	KAMCHATKA FLOUNDER	Other non-FMP flatfish	Other non-FMP flatfish	
KSTR	KUMAMOTO OYSTER	Other nongroundfish	Other nongroundfish	
LCD1	NOM. LINGCOD	Lingcod	Lingcod	yes
LCLM	NATIVE LITTLENECK	Other nongroundfish	Other nongroundfish	
LCOD	LINGCOD	Lingcod	Lingcod	yes
LDAB	LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LDB1	NOM. LONGFIN SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
LOBS	CALIF. SPINY LOBSTER	Other nongroundfish	Other nongroundfish	
LSKT	LONGNOSE SKATE	Longnose skate	Longnose skate	
LSP1	NOM. LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	
LSPN	LONGSPINE THORNYHEAD	Longspine thornyhead	Longspine thornyhead	
LSRK	LEOPARD SHARK	Other groundfish	Other groundfish	
LSTR	OLYMPIA OYSTER	Other nongroundfish	Other nongroundfish	
LUVR	LOUVAR	Other nongroundfish	Other nongroundfish	

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MACL	MUD CLAMS	Other nongroundfish	Other nongroundfish	
MAKO	SHORTFIN MAKO SHARK	Other nongroundfish	Other nongroundfish	
MCLM	MANILA CLAM	Other nongroundfish	Other nongroundfish	
MEEL	MONKEYFACE EEL	Other nongroundfish	Other nongroundfish	
MISC	MISC. FISH/ANIMALS	Other nongroundfish	Other nongroundfish	
MOLA	COMMON MOLA	Other nongroundfish	Other nongroundfish	
MRLN	STRIPED MARLIN	Other nongroundfish	Other nongroundfish	
MSC2	MISCELLANEOUS FISH	Other nongroundfish	Other nongroundfish	
MSHP	PLAINFIN MIDSHIPMAN	Other nongroundfish	Other nongroundfish	
MSQD	MARKET SQUID	Other nongroundfish	Other nongroundfish	
MSRM	MUD SHRIMP	Other nongroundfish	Other nongroundfish	
MXR1	NOM. MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
MXRF	MEXICAN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NANC	NORTHERN ANCHOVY	Other nongroundfish	Other nongroundfish	
NRCK	NORTHERN ROCKFISH	Other groundfish	Other groundfish	
NSHR	NORTHERN NEAR-SHORE ROCKFISH	Other nearshore rockfish	Northern nearshore rockfish	yes
NSLF	NORTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NSLP	NORTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
NUSF	NOR. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
NUSP	NOR. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
NUSR	NOR. UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Northern nearshore rockfish	yes
OABL	OTHER ABALONE	Other nongroundfish	Other nongroundfish	
OANC	OTHER ANCHOVY	Other nongroundfish	Other nongroundfish	
OBAS	OTHER BASS	Other nongroundfish	Other nongroundfish	
OCLM	OTHER CLAM	Other nongroundfish	Other nongroundfish	
OCRB	OTHER CRAB	Other nongroundfish	Other nongroundfish	
OCRK	OTHER CROAKER	Other nongroundfish	Other nongroundfish	
OCTP	UNSP. OCTOPUS	Other nongroundfish	Other nongroundfish	
ODSR	OTHER DEMERSAL RKFSH	Other groundfish	Other groundfish	
OECH	OTHER ECHINODERM	Other nongroundfish	Other nongroundfish	
OFLT	OTHER FLATFISH	Other flatfish	Other flatfish	
OGRN	OTHER GROUND FISH	Other groundfish	Other groundfish	
OLV1	NOM. OLIVE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
OLVE	OLIVE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
OMSK	OTHER MOLLUSKS	Other nongroundfish	Other nongroundfish	
OPLG	OTHER PELAGIC RKFSH	Other groundfish	Other groundfish	
ORCK	OTHER ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	
ORCK	OTHER ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	
ORND	OTHER ROUND FISH	Other groundfish	Other groundfish	
OSCL	OTHER SCALLOP	Other nongroundfish	Other nongroundfish	
OSKT	OTHER SKATES	Unspecified skate	Unspecified skate	
OSLR	OTHER SLOPE RKFSH	Other slope rockfish	Other slope rockfish	
OSRK	OTHER SHARK	Other nongroundfish	Other nongroundfish	
OSRM	OTHER SHRIMP	Other nongroundfish	Other nongroundfish	
OSTR	OTHER OYSTER	Other nongroundfish	Other nongroundfish	
OTCR	OPILIO TANNER CRAB	Tanner crab	Tanner crab	
OTNA	OTHER TUNA	Other nongroundfish	Other nongroundfish	
OURC	OTHER SEA URCHINS	Other nongroundfish	Other nongroundfish	
OWFS	OCEAN WHITEFISH	Other nongroundfish	Other nongroundfish	
PABL	PINK ABALONE	Other nongroundfish	Other nongroundfish	
PBNT	PACIFIC BONITO	Other nongroundfish	Other nongroundfish	
PBTR	PACIFIC BUTTERFISH	Other nongroundfish	Other nongroundfish	
PCLM	PISMO CLAM	Other nongroundfish	Other nongroundfish	

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PCOD	PACIFIC COD	Pacific cod	Other groundfish	
PDAB	PACIFIC SANDDAB	Other flatfish	Other flatfish	
PDB1	NOM. PACIFIC SANDDAB	Other flatfish	Other flatfish	
PFNS	PACIFIC FLATNOSE	Other groundfish	Other groundfish	
PGMY	PYGMY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PHAG	PACIFIC HAGFISH	Other nongroundfish	Other nongroundfish	
PHLB	PACIFIC HALIBUT	Other nongroundfish	Other nongroundfish	
PHRG	PACIFIC HERRING	Other nongroundfish	Other nongroundfish	
PINK	PINK SALMON	Other nongroundfish	Other nongroundfish	
PLCK	WALLEYE POLLOCK	Other groundfish	Other groundfish	
PNK1	NOM. PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PNKR	PINK ROCKFISH	Other shelf rockfish	Other shelf rockfish	
POMF	PACIFIC POMFRET	Other nongroundfish	Other nongroundfish	
POP	PACIFIC OCEAN PERCH	Pacific ocean perch	Other slope rockfish	
POP1	GEN. SHELF/SLOPE RF	Other slope rockfish	Other slope rockfish	
POP2	NOMINAL POP	Pacific ocean perch	Other slope rockfish	
PRCL	PURPLE CLAM	Other nongroundfish	Other nongroundfish	
PROW	PROWFISH	Other nongroundfish	Other nongroundfish	
PRR1	NOM. PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PRRK	PINKROSE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PSDN	PACIFIC SARDINE	Other nongroundfish	Other nongroundfish	
PSHP	PINK SHRIMP	Other nongroundfish	Other nongroundfish	
PSRK	PELAGIC THRESHER SHARK	Other nongroundfish	Other nongroundfish	
PSTR	PACIFIC OYSTER	Other nongroundfish	Other nongroundfish	
PTR1	NOM. PETRALE SOLE	Petrale sole	Petrale sole	
PTRL	PETRALE SOLE	Petrale sole	Petrale sole	
PUGT	PUGET SOUND ROCKFISH	Other shelf rockfish	Other shelf rockfish	
PWHT	PACIFIC WHITING	Pacific hake	Pacific hake	
QCLM	NORTHERN QUAHOG CLAM	Other nongroundfish	Other nongroundfish	
QFSH	QUEENFISH	Other nongroundfish	Other nongroundfish	
QLB1	NOM. QUILLBACK ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
QLBK	QUILLBACK ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
RABL	RED ABALONE	Other nongroundfish	Other nongroundfish	
RATF	SPOTTED RATFISH	Other groundfish	Other groundfish	
RCK1	BOCACCIO+CHILIPEPPER RCKFSH	Other shelf rockfish	Other shelf rockfish	
RCK2	UNSP. BOLINA RCKFSH	Other nearshore rockfish	Deeper nearshore rockfish	yes
RCK3	UNSP. DPWTR REDS RCKFSH	Other slope rockfish	Other slope rockfish	
RCK4	UNSP. REDS RCKFSH	Other groundfish	Other groundfish	
RCK5	UNSP. SMALL REDS RCKFSH	Other groundfish	Other groundfish	
RCK6	UNSP. ROSEFISH RCKFSH	Other groundfish	Other groundfish	
RCK7	UNSP. GOPHER RCKFSH	Other nearshore rockfish	Gopher rockfish (Remaining rockfish)	yes
RCK8	CANARY+VERMILION RCKFSH	Canary rockfish	Canary rockfish	
RCK9	BLACK+BLUE ROCKFISH	Black rockfish	Black rockfish	yes
RCKG	ROCK GREENLING	Other greenling	Other greenling	
RCLM	RAZOR CLAM	Other nongroundfish	Other nongroundfish	
RCRB	ROCK CRAB	Other nongroundfish	Other nongroundfish	
RDB1	NOM. REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	
RDBD	REDBANDED ROCKFISH	Other slope rockfish	Other slope rockfish	
REDS	REDSTRIPE ROCKFISH	Redstripe rockfish (Remaining rockfish)	Other slope rockfish	
REX	REX SOLE	Other flatfish	Other flatfish	
REX1	NOM. REX SOLE	Other flatfish	Other flatfish	
REYE	ROUGHEYE ROCKFISH	Other slope rockfish	Other slope rockfish	
RFLT	REMAINING FLATFISH	Other flatfish	Other flatfish	

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RGL1	NOM. ROCK GREENLING	Other greenling	Other greenling	
RGRN	REMAINING GROUND FISH	Other groundfish	Other groundfish	
RHRG	ROUND HERRING	Other nongroundfish	Other nongroundfish	
RKCR	RED KING CRAB	Other nongroundfish	Other nongroundfish	
ROS1	NOM. ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
ROSY	ROSY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RPRW	RIDGEBACK PRAWN	Other nongroundfish	Other nongroundfish	
RRCK	REMAINING ROCKFISH	Other groundfish	Other groundfish	
RRND	REMAINING ROUND FISH	Other groundfish	Other groundfish	
RSCL	RED IRISH LORD	Red Irish lord	Red Irish lord	yes
RSL1	NOM. ROCK SOLE	Other flatfish	Other flatfish	
RSOL	ROCK SOLE	Other flatfish	Other flatfish	
RSRM	GRASS SHRIMP	Other nongroundfish	Other nongroundfish	
RST1	NOM. ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RSTN	ROSETHORN ROCKFISH	Other shelf rockfish	Other shelf rockfish	
RURC	RED SEA URCHIN	Other nongroundfish	Other nongroundfish	
RZCL	ROSY RAZOR CLAM	Other nongroundfish	Other nongroundfish	
SABL	SABLEFISH	Sablefish	Sablefish	
SAIL	SAILFISH	Other nongroundfish	Other nongroundfish	
SARY	PACIFIC SAURY	Other nongroundfish	Other nongroundfish	
SBL1	NOM. SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	
SBLY	SHORTBELLY ROCKFISH	Shortbelly rockfish	Shortbelly rockfish	
SCLM	SOFT-SHELLED CLAM	Other nongroundfish	Other nongroundfish	
SCLP	UNSP. SCULPIN	Other nongroundfish	Other nongroundfish	
SCOR	CALIFORNIA SCORPIONFISH	Other groundfish	Other groundfish	yes
SCR1	NOM. CALIF. SCORPIONFISH	Other groundfish	Other groundfish	yes
SDB1	NOM. SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SFL1	NOM. STARRY FLOUNDER	Starry flounder	Starry flounder	
SFLT	UNSP. SHALLOW FLOUNDERS	Other flatfish	Other flatfish	
SHAD	UNSPECIFIED SHAD	Other nongroundfish	Other nongroundfish	
SHP1	NOM. CALIFORNIA SHEEPHEAD	California sheephead	California sheephead	yes
SHPD	CALIFORNIA SHEEPHEAD	California sheephead	California sheephead	yes
SHRP	SHARPCHIN ROCKFISH	Sharpchin rockfish	Sharpchin rockfish	
SKCR	SCARLET KING CRAB	Other nongroundfish	Other nongroundfish	
SLGR	SILVERGREY ROCKFISH	Silvergray rockfish (Remaining rockfish)	Other shelf rockfish	
SLNS	SLENDER SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
SMLT	UNSP. SMELT	Other nongroundfish	Other nongroundfish	
SNOS	SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	
SNS1	NOM. SPLITNOSE ROCKFISH	Splitnose rockfish (Remaining rockfish)	Splitnose rockfish	
SOCK	SOCKEYE SALMON	Other nongroundfish	Other nongroundfish	
SPK1	NOM. SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SPKL	SPECKLED ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SPRW	SPOTTED PRAWN	Other nongroundfish	Other nongroundfish	
SPSK	SANDPAPER SKATE	Other non-FMP skate	Other non-FMP skate	
SQID	UNSP. SQUID	Other nongroundfish	Other nongroundfish	
SQR1	NOM. SQUARESPOT	Other shelf rockfish	Other shelf rockfish	
SQRS	SQUARESPOT ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SRFP	SURFPERCH SPP.	Other nongroundfish	Other nongroundfish	
SRKR	SHORTTRAKER ROCKFISH	Other slope rockfish	Other slope rockfish	
SSCL	SHARPNOSE SCULPIN	Other nongroundfish	Other nongroundfish	
SSDB	SPECKLED SANDDAB	Other non-FMP flatfish	Other non-FMP flatfish	
SSHR	SOUTHERN NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes

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SSHR	SOUTHERN NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
SSKT	STARRY SKATE	Other non-FMP skate	Other non-FMP skate	
SSLF	SOUTHERN SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SSLP	SOUTHERN SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
SSO1	NOM. SAND SOLE	Other flatfish	Other flatfish	
SSOL	SAND SOLE	Other flatfish	Other flatfish	
SSPF	SHORTBILL SPEARFISH	Other nongroundfish	Other nongroundfish	
SSP1	NOM. SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	
SSPN	SHORTSPINE THORNYHEAD	Shortspine thornyhead	Shortspine thornyhead	
SSRD	Deep So. Near-shore RF	Southern nearshore rockfish	Deeper nearshore rockfish	yes
SSRK	SOUPFIN SHARK	Other groundfish	Other groundfish	
SSRS	Shallow So. Near-shore RF	Southern nearshore rockfish	Shallow nearshore rockfish	yes
STAR	STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STL1	NOM. STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STLH	STEELHEAD	Other nongroundfish	Other nongroundfish	
STNA	SKIPJACK TUNA	Other nongroundfish	Other nongroundfish	
STR1	NOM. STARRY ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STRK	STRIPETAIL ROCKFISH	Other shelf rockfish	Other shelf rockfish	
STRY	STARRY FLOUNDER	Starry flounder	Starry flounder	
SUSF	SOU. UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SUSP	SOU. UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes
SUSR	SOU. UNSP. NEAR-SHORE ROCKFISH	Southern nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
SWRD	SWORDFISH	Other nongroundfish	Other nongroundfish	
SWS1	NOM. SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
SWSP	SWORDSPINE ROCKFISH	Other shelf rockfish	Other shelf rockfish	
TCOD	PACIFIC TOMCOD	Other nongroundfish	Other nongroundfish	
TGR1	NOM. TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	
THD1	NOM. THORNYHEADS	Mixed thornyheads	Mixed thornyheads	
THDS	THORNYHEADS (MIXED)	Mixed thornyheads	Mixed thornyheads	
TIGR	TIGER ROCKFISH	Other shelf rockfish	Other shelf rockfish	
TRE1	NOM. TREEFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
TREE	TREEFISH	Other nearshore rockfish	Deeper nearshore rockfish	yes
TSRK	COMMON THRESHER SHARK	Other nongroundfish	Other nongroundfish	
UABL	UNSPECIFIED ABALONE	Other nongroundfish	Other nongroundfish	
UCLM	UNSPECIFIED CLAM	Other nongroundfish	Other nongroundfish	
UCRB	UNSPECIFIED CRAB	Other nongroundfish	Other nongroundfish	
UDAB	UNSP. SANDDABS	Other flatfish	Other flatfish	
UDF1	UNSP. DEEP-91 FLOUNDERS	Other flatfish	Other flatfish	
UDF2	UNSP. DEEP-95 FLOUNDERS	Other flatfish	Other flatfish	
UDM1	UNSP. DEMERSAL-91	Other groundfish	Other groundfish	
UDNR	UNSP. DEEP NEAR-SHORE RF	Other nearshore rockfish	Deeper nearshore rockfish	yes
UDSR	UNSP. DEMERSAL RKFSH	Other groundfish	Other groundfish	
UDW1	SHORTTRAKER+ROUGHEYE	Other slope rockfish	Other slope rockfish	
UECH	UNSPECIFIED ECHINODERM	Other nongroundfish	Other nongroundfish	
UFL1	FLOUNDERS (NO FSOL)	Other flatfish	Other flatfish	
UFLT	UNSP. FLATFISH	Other flatfish	Other flatfish	
UGLG	UNSP. GREENLING	Other greenling	Other greenling	yes
UGRN	UNSP. GROUND FISH	Other groundfish	Other groundfish	
UHAG	UNSPECIFIED HAGFISH	Other nongroundfish	Other nongroundfish	
UHLB	UNSPECIFIED HALIBUT	Other nongroundfish	Other nongroundfish	
UJEL	UNSP. JELLYFISH	Other nongroundfish	Other nongroundfish	
UKCR	UNSP. KING CRAB	Other nongroundfish	Other nongroundfish	

<b>PacFIN Species ID</b>	<b>PacFIN Common Name</b>	<b>Species Group - North of 40° 10' N latitude</b>	<b>Species Group - South of 40° 10' N latitude</b>	<b>NS Species</b>
UMCK	UNSP. MACKEREL	Other nongroundfish	Other nongroundfish	
UMSK	UNSPECIFIED MOLLUSKS	Other nongroundfish	Other nongroundfish	
UPLG	UNSP. PELAGIC RKFSH	Other groundfish	Other groundfish	
UPOP	UNSP. POP GROUP	Pacific ocean perch	Other slope rockfish	
URCK	UNSP. ROCKFISH	Other slope rockfish (>150 fm)	Other slope rockfish (>150 fm)	
URCK	UNSP. ROCKFISH	Other shelf rockfish (<150 fm)	Other shelf rockfish (<150 fm)	
URK1	SRKR+REYE+NRCK+SHRP	Other slope rockfish	Other slope rockfish	
URND	UNSP. ROUNDFISH	Other groundfish	Other groundfish	
USCL	UNSPECIFIED SCALLOP	Other nongroundfish	Other nongroundfish	
USCU	UNSP. SEA CUCUMBERS	Other nongroundfish	Other nongroundfish	
USF1	UNSP. SHALLOW-91 FLOUNDERS	Other flatfish	Other flatfish	
USHR	UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Deeper nearshore rockfish (>10 fm)	yes
USHR	UNSP. NEAR-SHORE ROCKFISH	Other nearshore rockfish	Shallow nearshore rockfish (<10 fm)	yes
USKT	UNSP. SKATE	Unspecified skate	Unspecified skate	
USLF	UNSP. SHELF ROCKFISH	Other shelf rockfish	Other shelf rockfish	
USLP	UNSP. SLOPE ROCKFISH	Other slope rockfish	Other slope rockfish	
USLR	UNSP. SLOPE RKFSH	Other slope rockfish	Other slope rockfish	
USMN	UNSP. SALMON	Other nongroundfish	Other nongroundfish	
USR1	UNSP. SLOPE-91	Other groundfish	Other groundfish	
USR2	UNSP. SLOPE-93	Other groundfish	Other groundfish	
USRK	UNSP. SHARK	Other nongroundfish	Other nongroundfish	
USRM	UNSP. OCEAN SHRIMP	Other nongroundfish	Other nongroundfish	
USTG	UNSP. STURGEON	Other nongroundfish	Other nongroundfish	
USTR	UNSPECIFIED OYSTER	Other nongroundfish	Other nongroundfish	
UTCR	UNSP. TANNER CRAB	Tanner crab	Tanner crab	
UTNA	UNSPECIFIED TUNA	Other nongroundfish	Other nongroundfish	
UTRB	UNSP. TURBOTS	Other flatfish	Other flatfish	
UURC	UNSP. SEA URCHINS	Other nongroundfish	Other nongroundfish	
VCLM	VARNISH CLAM	Other nongroundfish	Other nongroundfish	
VRM1	NOM. VERMILLION ROCKFISH	Other shelf rockfish	Other shelf rockfish	
VRML	VERMILION ROCKFISH	Other shelf rockfish	Other shelf rockfish	
WABL	WHITE ABALONE	Other nongroundfish	Other nongroundfish	
WBAS	WHITE SEABASS	Other nongroundfish	Other nongroundfish	
WCLM	WASHINGTON CLAM	Other nongroundfish	Other nongroundfish	
WCRK	WHITE CROAKER	Other nongroundfish	Other nongroundfish	
WDOW	WIDOW ROCKFISH	Widow rockfish	Widow rockfish	
WDW1	NOM. WIDOW ROCKFISH	Widow rockfish	Widow rockfish	
WEEL	WOLF EEL	Other nongroundfish	Other nongroundfish	
WHOO	WAHOO	Other nongroundfish	Other nongroundfish	
WSTG	WHITE STURGEON	Other nongroundfish	Other nongroundfish	
YEY1	NOM. YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	
YEYE	YELLOWEYE ROCKFISH	Yelloweye rockfish	Yelloweye rockfish	
YLTL	YELLOWTAIL	Other nongroundfish	Other nongroundfish	
YMTH	YELLOWMOUTH ROCKFISH	Yellowmouth rockfish (Remaining rockfish)	Other slope rockfish	
YSOL	YELLOWFIN SOLE	Other non-FMP flatfish	Other non-FMP flatfish	
YTNA	YELLOWFIN TUNA	Other nongroundfish	Other nongroundfish	
YTR1	NOM. YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	
YTRK	YELLOWTAIL ROCKFISH	Yellowtail rockfish	Yellowtail rockfish (Remaining rockfish)	