

Data Report and Summary Analyses of Limited-Entry Trawl Permits

West Coast Groundfish Observer Program

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Photo: NOAA Fisheries

Table of Contents

INTRODUCTION	4
Overview.....	4
West Coast Limited-Entry Groundfish Trawl Fishery.....	4
West Coast Groundfish Observer Program.....	5
Program Goals.....	5
METHODS	5
Permit Selection Process for Limited-Entry Trawl.....	5
Vessel Coverage.....	6
Trawl Data Collection.....	7
Data Quality Control and Management.....	8
Data Processing.....	9
Analysis.....	11
RESULTS AND DISCUSSION	12
Overall Coverage Levels.....	12
Spatial Distribution of Observations.....	12
Discard Estimates.....	14
Continuing Unresolved Data Issues.....	16
REFERENCES	17
APPENDICES	
Appendix A: Oracle Database.....	18
FIGURES	
Figure 1a: Locations of observed and logbook bottom trawls north of Coos Bay, Oregon in 2006.....	19
Figure 1b: Locations of observed and logbook bottom trawls south of Coos Bay, Oregon and north of San Francisco, California in 2006.....	20
Figure 1c: Locations of observed and logbook bottom trawls south of San Francisco, California in 2006.....	21
Figure 2: Plot locations of observed and logbook bottom trawls occurring coastwide.....	22
Figure 3a: Histograms of bocaccio rockfish with discarded pounds (in number of tows) in groundfish tows by area.....	23
Figure 3b: Histograms of canary rockfish with discarded pounds (in number of tows) in groundfish tows by area.....	24
Figure 3c: Histograms of cowcod rockfish with discarded pounds (in number of tows) in groundfish tows by area.....	25
Figure 3d: Histograms of widow rockfish with discarded pounds (in number of tows) in groundfish tows by area.....	26
Figure 3e: Histograms of yelloweye rockfish with discarded pounds (in number of tows) in groundfish tows by area.....	27
Figure 3f: Histograms of darkblotched rockfish with discarded pounds (in number of tows) in groundfish tows by area.....	28
Figure 3g: Histograms of Pacific ocean perch with discarded pounds (in number of tows) in groundfish tows by area.....	29

Table of Contents

TABLES

Table 1:	Sum of landings for observed and unobserved limited-entry trawl trips by year and port group.....	30
Table 2:	Number of trips sampled by observers on limited-entry trawl vessels from January 1, 2006 to April 30, 2007 by port group and two-month period.....	31
Table 3:	Number of tows sampled by observers on limited-entry trawl vessels from January 1, 2006 to April 30, 2007 by area, depth, and two-month period.....	32
Table 4:	Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 to April 30, 2007 in groundfish tows.....	33
Table 5:	Discarded, retained, and total catch (pounds) for 4 non-groundfish species or species groups by area and depth (fathoms) from January 1, 2006 to April 30, 2007 in groundfish tows.....	59
Table 6:	Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth, and season from January 1, 2006 to April 30, 2007 in observed groundfish tows.....	63
Table 7:	Ratio estimate and standard error for the total bycatch of six overfished species per one-hundred pounds of retained groundfish by area, depth, and season in groundfish tows from January 1, 2006 to April 30, 2007.....	98
Table 8:	Ratio estimator and standard error for the total bycatch of seven rebuilding species per one-hundred pounds of total retained groundfish by area, observer program year, and depth.....	101

INTRODUCTION

Overview

This report summarizes discarded catch data collected by the West Coast Groundfish Observer Program (WCGOP) from the limited-entry (LE) trawl fleet from January 1, 2006 through April 30, 2007. The WCGOP collects at-sea data from LE trawl and fixed-gear fisheries as well as from open access nearshore, prawn/shrimp, California halibut, and deep water fisheries. The WCGOP's goal is to improve total catch estimates by collecting information on the discarded catch (fish returned overboard at-sea) of west coast groundfish species. The data is used in assessing and managing a variety of groundfish species.

West Coast Limited-Entry Groundfish Trawl Fishery

The LE groundfish trawl fishery off the west coast of the United States operates from the Canadian border to Morro Bay, California. In 2006, there were 180 LE trawl permits of which 170 were active in the bottom trawl fishery. Active is defined for these purposes as the permit being identified to a vessel. Ten of the 180 permits are associated with factory processors who fish only for Pacific hake and are observed by the At-Sea Hake Observer Program (ASHOP).

Groundfish bottom trawl vessels range in size from 35 to 95 feet and average 65 feet. Vessels fish throughout the year in both nearshore (0 – 50 fathoms) and offshore waters (> 50 fathoms) and deliver catch to shoreside processors. Bottom trawlers often target species assemblages, which can result in very diverse catch, especially when compared to single species trawl fisheries, such as Pacific hake. A single groundfish bottom trawl tow often includes fifteen to twenty species. Fish size and weight of the total catch also vary widely. Groundfish trawl vessels retain the portion of their catch that is marketable and permitted to be landed. The portion of the catch which is not marketable or for which regulations prohibit landing is discarded at-sea.

Active management of the fishery began in the early 1980's with the establishment of Optimum Yields (OY) for several managed species and trip limits for widow rockfish, the *Sebastes* complex, and sablefish. The objective of trip limits has been to slow the pace of landings to maintain year-round fishing, processing, and marketing opportunities. Since the 1980's, regulations have evolved to further separate individual groundfish species for management purposes and led to the current use of cumulative two-month landing limits for most species.

Fisheries managers and enforcement officers use state-issued sales receipts, referred to as fish tickets, and vessel logbooks to monitor fishery landings. Fish ticket and vessel logbook data are transferred to the Pacific Coast Fisheries Information Network (PacFIN) regional database system by state fishery

agencies in Washington, Oregon, and California. Fish tickets are useful for monitoring the fishery throughout the year. Trip limit amounts may be changed through in-season management based on the fish ticket data. However, fish tickets only provide information on the amount of fish landed. In order to ensure that total catch does not exceed annual OY's, 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 to 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 US west coast. Originally, the WCGOP focused observer effort in the LE trawl and fixed-gear fisheries. In 2002, the WCGOP began deploying observers in open access fisheries while increasing its coverage of the LE trawl fishery. In 2005, the WCGOP increased its coverage of the LE fixed-gear fishery and in 2006, the WCGOP improved coverage of the open access 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 the open access fisheries. The observer coverage plan is available at: <http://www.nwfsc.noaa.gov/research/divisions/fram/observer/observersamplingplan.pdf>.

METHODS

Permit Selection Process for Limited-Entry Trawl Permits

Limited-entry trawl permits are selected for observation using stratified random sampling. First, the WCGOP determines the amount of time (based on available resources) it will take to observe the entire fleet; this is termed the selection cycle. The selection cycle varies due to changing priorities and observer resources. Because of the data and timeline requirements for fisheries management and historical observer program vessel coverage, the selection cycles do not coincide with the date range of

the observer data analyzed in this report. The data in this report were collected during two selection cycles. The date range for the two selection cycles were September 1, 2005 to June 30, 2006 (selection cycle 6) and July 1, 2006 to April 30, 2007 (selection cycle 7).

	2005				2006								2007							
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Selection Cycles	Selection Cycle 6								Selection Cycle 7											
Report Data					Date Range of Report Data															

In selection cycle 6, 127 LE trawl permits were selected for observer coverage and in selection cycle 7 there were 129 permits selected for observer coverage. To avoid selecting vessels that have not been participating in the LE bottom trawl fishery, the WCGOP classified permits meeting the following criteria as inactive:

- Permits that did not land any groundfish during 2004 (selection cycle 6) or 2005 (selection cycle 7).
- All permits associated with catcher-processors or motherships that only participate in the offshore component of the Pacific hake fishery.
- Permits that were associated with recently sunk vessels or that are owned by deceased or terminally ill persons.
- Permits associated with “unidentified” vessels.

The inactive permits were removed from the selection lists for cycles 6 and 7.

The WCGOP aggregates locations along the US west coast into port groups, which are considered strata. Vessels with LE trawl permits are assigned to a port group based upon the location of the previous year’s landings. Within each port group, the vessels are randomly selected for coverage for 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 and throughout the two-month periods. Based on this design and the current level of WCGOP funding, the program is currently cycling through the LE trawl fleet every ten months.

For more information on the rational behind vessel selection, see the observer coverage plan at:

<http://www.nwfsc.noaa.gov/research/divisions/fram/observer/observersamplingplan.pdf>

Vessel Coverage

The LE trawl fleet is one of WCGOP’s highest priorities for observer coverage. Nearly all trips taken within the two-month period by a vessel whose permit has been selected are covered by an observer. However, sometimes vessels whose permits are selected for a specific two-month period may not be covered by an observer during that period or may not be covered on all trips during that period. Single

trips may be waived from observer coverage due to observer availability or a safety issue that can be fixed in a relatively short period of time. A few LE trawl 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.

Some vessels may receive a coverage period waiver. Coverage period waivers allow a vessel to fish all trips during a two-month period without an observer. Coverage period waivers are given for a variety of reasons including participation in a different fishery (i.e. crab, shrimp), observer availability, and vessel safety. Vessels are given a coverage period waiver for a specified two-month time period and 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 in the subsequent selection list until either an observer covers them or until the selection cycle ends, whichever comes first.

Trawl 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 2006, current manual available at: <http://www.nwfsc.noaa.gov/research/divisions/fram/observer/observermanual/observermanual.cfm>).

Data collected by the observers on a trip basis include:

- Start time, end time, depth, and the start and end location of tows
- Gear type and fishing strategy
- Fish ticket identification numbers

Data collected by the observers on a tow basis include:

- Estimated total catch weight (including tows 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 (otoliths, maturity, food habits, genetic samples, etc.)

For more information regarding observer sampling on trawlers, refer to the WCGOP Observer Training Manual, Chapter 4 – Trawl Sampling at: <http://www.nwfsc.noaa.gov/research/divisions/fram/observer/observermanual/observermanual.cfm>.

Data Quality Control and Management

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

1. Data are collected at-sea by the observer following protocols in the WCGOP Manual (NWFSC 2006).
2. Data are entered into the database system. The data are entered into a centralized Oracle database located at the Northwest Fisheries Science Center (NWFSC). Data within the Oracle database are accessible via a web-based GUI or by direct SQL queries to the database. A list of data tables is located in Appendix A.
3. Observers are debriefed by WCGOP staff after every two-month cumulative trip limit period. The debriefing includes:
 - A. 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.
 - B. 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 tows during which sampling problems occurred are documented in the logbook and reviewed during debriefing.
 - C. Interview – The observer is interviewed by the debriefer. During the interview, sampling methodologies employed on all trips are discussed and data errors are updated.
 - D. Evaluation - Observers are evaluated on their performance based upon WCGOP generated criteria.
 - E. Data Entry Check - Electronic data are compared to the raw data for keypunch errors. Also, all corrections discovered during debriefing are updated in the database program.
4. Database Quality Control Queries - Quality control queries are run to detect data that fall outside specified ranges and identify other inconsistencies between data elements. These database quality control queries are run every six months to a year on all data collected during a specified time period.
5. Database Update - The raw data from all entries that are highlighted by the QC 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 tow-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 LE trawl fishery including the observed trips; and then merge observer data and fish ticket data. The translation of species codes results in a more seamless match with fish ticket data and provides information on observer coverage of overall fishery landings.

The WCGOP database administrator expands the subsamples of catch categories to the tow level. A tow-level expansion is needed to estimate the total retained and discarded weight for each species because of the sampling procedure used to collect the species composition data. If the species composition of a catch category is mixed, an observer may take a subsample from the catch category. The following equation is used to calculate the weight of the subsample by summing across the observed weights of the individual species:

$$w_j = \sum_i x_{ij}$$

where

x_{ij} = observed weight of the species i in catch category j in the subsample,

w_j = weight of the subsample from catch category j .

The sampling ratio (R_j) used to scale the subsample weights to the amount in the catch category is calculated by dividing the weight of the subsample by the total weight of the catch category using the equation:

$$R_j = w_j / y_j$$

where

y_j = the total weight of catch category j .

The tow-level expanded weight of species i in category j is calculated by dividing the species weight in the subsample by the sampling ratio in the following equation:

$$X_{ij} = x_{ij} / R_j$$

where

X_{ij} = the weight of species i in catch category j .

Tallying the weight (X_{ij}) of the species (i) across all categories (j) within a tow provides the total weight of the species retained or discarded.

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

Only the retained catch from trips with all tows sampled are required for the process of matching

observer data to fish ticket data. The data records not required for matching the data to fish tickets are removed from the data file for the matching process. The records that are removed and contain sampled catch data are added back into the data file prior to the coverage and discard rate analysis. Data that meets the following criteria are removed for the fish ticket matching process:

- Data where WCGOP data quality standards are not met. (These data are only used for the coverage rate analysis).
- Trips with tows where no retained or discarded information is recorded.
- Tows where observed total catch weight = 0.
- All discarded catch information. (These data are added back in for the discard analysis.)
- Trips where no fish ticket could be found. (These data are added back in for the coverage rate and discard rate analyses.)
- Partial trips (trips where the vessel was observed for less than 100% of their landed catch). (These data are added back in for the coverage rate and discard rate analyses.)

Next, the translation step of the process adds coding to the observer data that allows for the appropriate match to the coding system used to record data on fish tickets.

Once these two steps are completed, the retained catch records from the WCGOP data are merged with fish ticket data to provide more accurate estimates of retained catch. Fish tickets are trip-aggregated sales receipts for marketable 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 WCGOP data are not adjusted.

The WCGOP data are adjusted so that the total trip pounds of retained fish in a catch category (as recorded by the observer) matches the total trip pounds on the fish ticket, because the fish ticket weight is often more accurate. 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:

$$A_{jkm} = x_{jkm} / \sum_k x_{jkm}$$

where

x_{jkm} = lbs in catch category j in tow k in trip m

A_{jkm} = adjustment factor used for catch category j in tow k in trip m .

The equation used to adjust the WCGOP data is:

$$x_{jkm} = A_{jkm} \cdot C_{jm}$$

where

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

When a catch category in the WCGOP data cannot be matched to a fish ticket species category, the WCGOP data are not adjusted.

Catch categories found only on the fish tickets are distributed across the observed tows using the proportion of the observed catch per tow divided by the total observed catch per trip using the following equation:

$$B_{km} = \text{Total weight per tow} / \text{Total weight per trip} = \frac{\sum_j \sum_i x_{ijkm}}{\sum_k \sum_j \sum_i x_{ijkm}}$$
$$C_{jkm} = B_{km} \cdot C_{jm}$$

where

B_{km} = the proportion of observed catch in tow k in trip m

C_{jkm} = lbs in catch category j for tow k 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 step are then incorporated back into the data file for analysis.

Analysis

The dataset analyzed includes bottom trawl tows made using both large and small footrope gear configurations. Trawlers using gear other than bottom trawl gear (Danish/Scottish seine, of which there is only one vessel) were excluded from this analysis. In previous years, trawlers fishing under exempted fishing permits (EFP) had been excluded from the analysis because they fished under different regulations, but in the data time frame of this report, none of the trawl vessels were fishing an EFP. Trips from LE trawl vessels targeting California halibut were also excluded from the analysis. The exception is in Table 1, which includes those trips targeting California halibut because determining target strategy from the fish ticket data alone is not trivial. For information related to LE trawl vessels targeting California halibut, refer to the 2005 summary report online at: http://www.nwfsc.noaa.gov/research/divisions/fram/observer/datareport/docs/summary_observed_groundfish_bycatch_groundfish_limited_entry_vessels_targeting_california_halibut.pdf (NMFS 2005).

Rates were calculated for a particular species as pounds discarded per hour of towing, pounds discarded per one-hundred pounds of groundfish retained, and pounds caught (retained plus discarded) per one-hundred pounds of groundfish retained. The ratio estimator technique (Cochran 1977) was used to estimate bycatch and discard rates for 35 selected species or species groups. The fish species selected for estimation were all of the stocks currently managed under rebuilding plans, prohibited species in this fishery (salmon, Pacific halibut), and other assessed stocks. The months of May through September are

classified as the summer season and October through April are classified as the winter season. The ratio estimates (R_{ijk}) were calculated by area (i), depth range (j), and season (k):

$$R_{ijk} = \frac{\sum_t y_{ijkt}}{\sum_t x_{ijkt}}$$

where

y_{ijkt} is the discarded or retained pounds of a species in the tow t .

Three denominators (x_{ijkt}) are presented here: duration in hours of the sampled tow t , total catch in pounds of the target species, and total catch of all groundfish in the tow t . The first denominator is an un-standardized catch-per-unit-effort for the area-depth-period stratum. The second and third denominators are used to provide different perspectives for these preliminary analyses. The variance of R_{ijk} is approximated by using the following equation (Cochran 1977):

$$Var(R_{ijk}) = \frac{1}{n} \left(\frac{\bar{y}_{ijk}}{\bar{x}_{ijk}} \right)^2 \left[\frac{s^2(y_{ijkt})}{\bar{y}_{ijk}^2} + \frac{s^2(x_{ijkt})}{\bar{x}_{ijk}^2} - 2 \left(\frac{\sum_t (y_{ijkt} - \bar{y}_{ijk})(x_{ijkt} - \bar{x}_{ijk})}{\bar{y}_{ijk} \bar{x}_{ijk}} \right) \right]$$

where

\bar{x}_{ijk} and \bar{y}_{ijk} are the means of x_{ijkt} and y_{ijkt} over the tows and $s(x_{ijkt})$ and $s(y_{ijkt})$ are the standard errors of x_{ijkt} and y_{ijkt} .

Note that $Var(R_{ijk})$ cannot be calculated when $y_{ijkt} = 0$ or $x_{ijkt} = 0$ for all tows and should be used with extreme caution when R_{ijk} is equal to one. This variance estimator was chosen in place of the previously used estimator from Pikitch et al. (1998) because the estimator from Cochran (1977) does not assume independence of the numerator and denominator.

RESULTS AND DISCUSSION

Overall Coverage Levels

In 2006, LE bottom trawl trips observed by the WCGOP accounted for 22% of coast-wide landings of groundfish from all bottom trawl trips (Table 1). In 2006, sharks, skates, and spiny dogfish shark were added to the species used to calculate coverage rates. Coverage slightly decreased from the previous period coverage level of 24% in 2005 (NMFS 2006, Table 1). During January thru April 2007, landings from the observed LE bottom trawl trips were 18% of the total tonnage for all LE trawl trips. The early 2007 coverage level indicates a decrease in the coverage rate, but is close to the target of 20% coverage.

Spatial Distribution of Observations

In 2006, the LE trawl fleet in Bellingham, Crescent City, Eureka, and Fort Bragg had similar coverage levels (Table 1) relative to 2005 (NMFS 2006, Table 1). Bellingham, Neah Bay, Newport, Eureka, and

Fort Bragg had increases in trawl coverage from 2005 to 2006. From 2005 to 2006, coverage decreased in Astoria, Coos Bay, San Francisco, Monterey, and Morro Bay. In 2006, Crescent City, San Francisco, Monterey, and Morro Bay had coverage of less than 20% and landings from these ports were 14% of overall LE trawl landings by weight. Coverage levels are subject to variation for several reasons. The WCGOP can control the number of boats observed, but not the amount of fish landed by these boats or the location of fishing effort. Coverage levels will fluctuate as a function of the amount of fish landed in a fishery and the amount of fish landed by the vessels observed, but these fluctuations are to be expected. In 2007, coverage levels vary along the coast (Table 1), which is not unusual given the small number of trips covered in several of the port groups (Table 2) and that coverage estimates only encompass four months as opposed to an entire year. The small number of observed trips from January to April 2007 causes the metric tons observed to be sensitive to the fishing effort and success of those individual fishing vessels.

The numbers of trips observed within each port group during each two-month period are reported in Table 2. At this level of detail, the highly variable nature of observer coverage is revealed. Not only does the number of observed trips vary dramatically throughout the year within a port group, but so does that group's portion of the total observed trips. Several factors contribute to this variability, including weather-related impacts on fishing activity, the regional importance of other seasonal fisheries, such as shrimp and crab, regional differences in trip limits, and differences in the number and characteristics of vessels between port groups.

Plots summarizing the spatial distribution of all LE bottom tows recorded in state logbooks and tows observed are presented for three sections of the west coast in Figures 1a-c. In these figures, trawl tows were assigned to 10 km by 10 km grid blocks based on the starting locations of the tows. The shading of each block reflects the number of logbook tows, with darker shading indicating more tows. The circles overlaid on each block reflect the number of observed tows, with larger circles indicating more tows. Blocks with the darkest shading and the smallest circles indicate fishing locations that received less observer coverage relative to fishing effort.

The spatial distribution of the LE trawl fleet and those tows observed by the WCGOP can be reviewed for general spatial sampling coverage in 2006. Figure 1a depicts the portion of the coast north of Coos Bay, Oregon. Figure 1b shows the area south of Coos Bay, Oregon to just north of San Francisco, California. Figure 1c portrays the California coast, as far south as Morro Bay. Within each of these areas, and for the coast as a whole, the spatial distribution of LE trawl tows appears to have been generally well sampled by observers during 2006.

The 2006 distribution of LE trawl fishing effort and observed tows can also be examined in terms of latitude and depth as depicted in Figure 2. The vertical lines at 100 fm and 150 fm provide reference points for understanding effects of the trawl Rockfish Conservation Area (RCA) on fishing location.

In 2006, the trawl RCA eastern boundaries ranged from 75 to 100 fathoms. The trawl RCA western boundaries ranged from 150 to 250 fathoms. These spatial closures incorporated depths from 100 to 150 fathoms coast-wide for the entire year and a distinct lack of tows in this depth range is evident in Figure 2. LE trawl tows within these closed depths may be a result of the data representing the average depth of a tow and the fact that RCA boundaries are defined geographically to approximate depth contours. Therefore, tows with an average depth reported between 100 and 150 fathoms may occur outside of the RCA boundaries.

Table 3 summarizes the depth distribution of observed tows by area and two-month period. Area strata are defined as north of 40° 10' N. latitude and south of 40° 10' N. latitude. Only a small amount of observed fishing effort in the south occurred in depths less than 150 fathoms. Coast-wide, the majority of observed trawl fishing effort occurred in depths less than 75 fathoms or greater than 150 fathoms.

Discard Estimates

Fish tickets were matched to the 465 observed trips in 2006 and 2007. In 2006, three trips were missing fish tickets in PacFIN. In early 2007, two trips had fish tickets missing from PacFIN, and for one trip, the recorded fish ticket in the observer database was incorrect. In 2006, 16 trips had tows where species data was insufficient to match to a fish ticket because of sampling difficulties, such as rough weather or observer illness and the retained catch could not be adjusted to match fish ticket data. In early 2007, only one trip had an unsampled tow.

Additionally, a number of groundfish species assessed in 2006 had little to no observed discard in groundfish trawl tows. Therefore, these species were not incorporated into the tables. Kelp greenling was observed in 13 tows for a total of 63 lbs from 10 tows in the north and 3 lbs from 3 tows in the south at less than 75 fathoms. Cabezon was observed in only one tow with 21 lbs of fish in the north. Vermillion rockfish were observed in one tow with a total of 5 lbs in the north. Gopher rockfish and California scorpionfish were not observed in groundfish trawl tows.

Amounts of discarded and retained catch for 26 species or species groups of groundfish are provided in Table 4. The data are categorized by area and depth zone. This table also summarizes the distribution of observed discarded and retained fish by depth and the disposition of each species within a depth zone. Table 5 provides comparable information for California halibut, Pacific halibut, and chinook and coho salmon species. No sockeye, chum, or pink salmon were observed in any of the groundfish trawl tows.

As briefly mentioned, this report includes certain sharks and skates, and spiny dogfish in the weight of retained groundfish, which is one of the denominators used in Tables 6 and 7. The inclusion of these species represents a potentially significant increase in the weight of retained catch landed and therefore, caution should be used when comparing ratios in this report with ratios in previous reports.

Three different ratio estimators for discard of 35 groundfish and non-groundfish species or species groups are presented in Table 6. The three estimators are (1) discard per hour towed, (2) discard per one-hundred pounds of retained groundfish, and (3) discard of each species/group per pound of its own catch. Standard errors are also reported for each of the ratios. Results are summarized by area, depth zone, and season. The following strata combinations contained insufficient data for estimation: winter 2007 tows in depths of 75 to 150 fm and winter 2007 tows in depths of less than 75 fm in the south. As a rule, rates of discard calculated relative to hours towed and retained groundfish exhibit the same direction of change across strata, however the magnitudes of change are not proportional. There is no consistent relationship between the percentage of a species that is discarded and the other two measures of discard in Table 6.

The vast majority of tows had no discard of the following rebuilding species: bocaccio rockfish, canary rockfish, cowcod rockfish, Pacific ocean perch, widow rockfish, and yelloweye rockfish (Figure 3). Eighty-seven percent of the tows had no discard of darkblotched rockfish. If discard occurred, most tows discarded less than 30 pounds of the rebuilding species. The percentage of tows with canary rockfish discard increased slightly from 6% in 2005 to 8% in 2006. The majority of bocaccio bycatch and discard occurred south of 40° 10' N. latitude (Table 4). Canary rockfish was primarily caught north of 40° 10' N. latitude and in depths of less than 150 fathoms. The majority of widow rockfish were caught south of 40° 10' N. latitude. Pacific ocean perch were primarily caught north of 40° 10' N. latitude, primarily in depths greater than 150 fathoms. Yelloweye rockfish were also only caught north of 40° 10' N. latitude.

For each of the seven rebuilding species, Table 7 presents the ratio estimate and standard error for total bycatch (discarded plus retained pounds) per one-hundred pounds of groundfish landed by area, depth zone, and season. The following strata combinations contained insufficient data for estimation: winter 2007 tows in depths of 75 to 150 fm and winter 2007 tows in depths of less than 75 fm in the south. Skewed distribution of observations, exhibited by the extreme values of a few observations, can result in large standard errors for the ratio estimators relative to the ratios themselves. The method of calculating these bycatch ratios is very similar to that employed in developing parameters for the trawl bycatch model used by the Pacific Fishery Management Council for management of the LE trawl fishery. The denominator used to calculate rates in the bycatch model equals the sum of landed flatfish, thornyheads, sablefish, other roundfish, rockfish, sharks, and skates in the fishery management plan. The bycatch rates presented here are calculated using total retained groundfish as the denominator.

In Table 8, the bycatch rate for each species from Table 7 are presented along with bycatch rates from previous WCGOP reports. In the north, RCA full year closures existed in 2003 from 100 to 200 fm, in 2004 from 75 to 150 fm, in 2005 from 100 to 200 fm, and from 100 to 150 fm in 2006. Therefore, bycatch rates in the 75 to 150 depth strata are influenced by the lack of tows in portions of this stratum due to closures.

In 2006 relative to 2005, the bycatch rates of canary rockfish and Pacific ocean perch remained at levels similar to previous years. The bycatch rate of bocaccio rockfish increased in 2006, returning to levels similar to 2004. The bycatch rate for darkblotched rockfish increased in depths greater than 150 fm, but decreased in depths from 100 to 150 fm. In 2006, bycatch rate of widow rockfish increased in the south, but remained similar to 2005 levels coastwide. Overall, the 2006 bycatch rate of cowcod rockfish was similar to the 2005 rate, but the cowcod bycatch rate in the south in the depth strata from 75 to 150 fm had decreased. The bycatch rate for yelloweye rockfish increased in 2006.

Continuing Unresolved Data Issues

Accurate calculation of bycatch rates requires linking observer discard estimates to the PacFIN database that includes official weights for species measured at the time of landing. The two principal sources of landings data are fish tickets and logbooks that have been adjusted using fish tickets. Matching WCGOP data with fish ticket and logbook data remains challenging due to the difference in data protocols among the states of Washington, Oregon, and California, and between the state agencies and the WCGOP.

Because catch categories recorded on fish tickets are recorded only at the trip level, distributing landed weight across individual tows is inevitably imprecise when tow specific WCGOP data is unavailable. This is particularly true when a trip consisted of tows in several different depth zones. The current approach is to distribute landings in proportion to each tow's percentage of the trip's total retained groundfish weight. Future work will evaluate the incorporation of additional information that may improve these assignments. For catch categories that exist in both fish ticket and observer records, the uncertainty in assigning weight differences between observed trip retained weights and the corresponding fish tickets is reduced, although not eliminated, by knowledge of the pattern of hailed catch throughout the trip.

Each of the west coast state agencies employs different procedures for adjusting fish ticket landings and logbook retained catch (Sampson and Crone 1997, Pearson and Erwin 1997, Clark 1986a, 1986b, 1988a, 1988b). Linking WCGOP records with corresponding logbook tow data is often difficult and time-consuming, due to the inconsistent adjustment protocols and other factors such as 1) incomplete logbook submission, 2) a significant number of logbook trips where tows are not recorded in chronological order, 3) the absence of some tows in logbooks, especially when no groundfish are retained, and 4) inaccurate recording of tow date, location, and depth. If these issues were resolved, the analysis of WCGOP data could be more comprehensive and timely.

It is expected that results from the 2006 WCGOP coverage presented in this report will be used in the fishery management process. When combined with additional sources of fishery information, these results can improve total catch estimates for west coast groundfish fisheries.

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APPENDIX A. Oracle Database

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 in the table below are a subset of the total tables contained in the 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

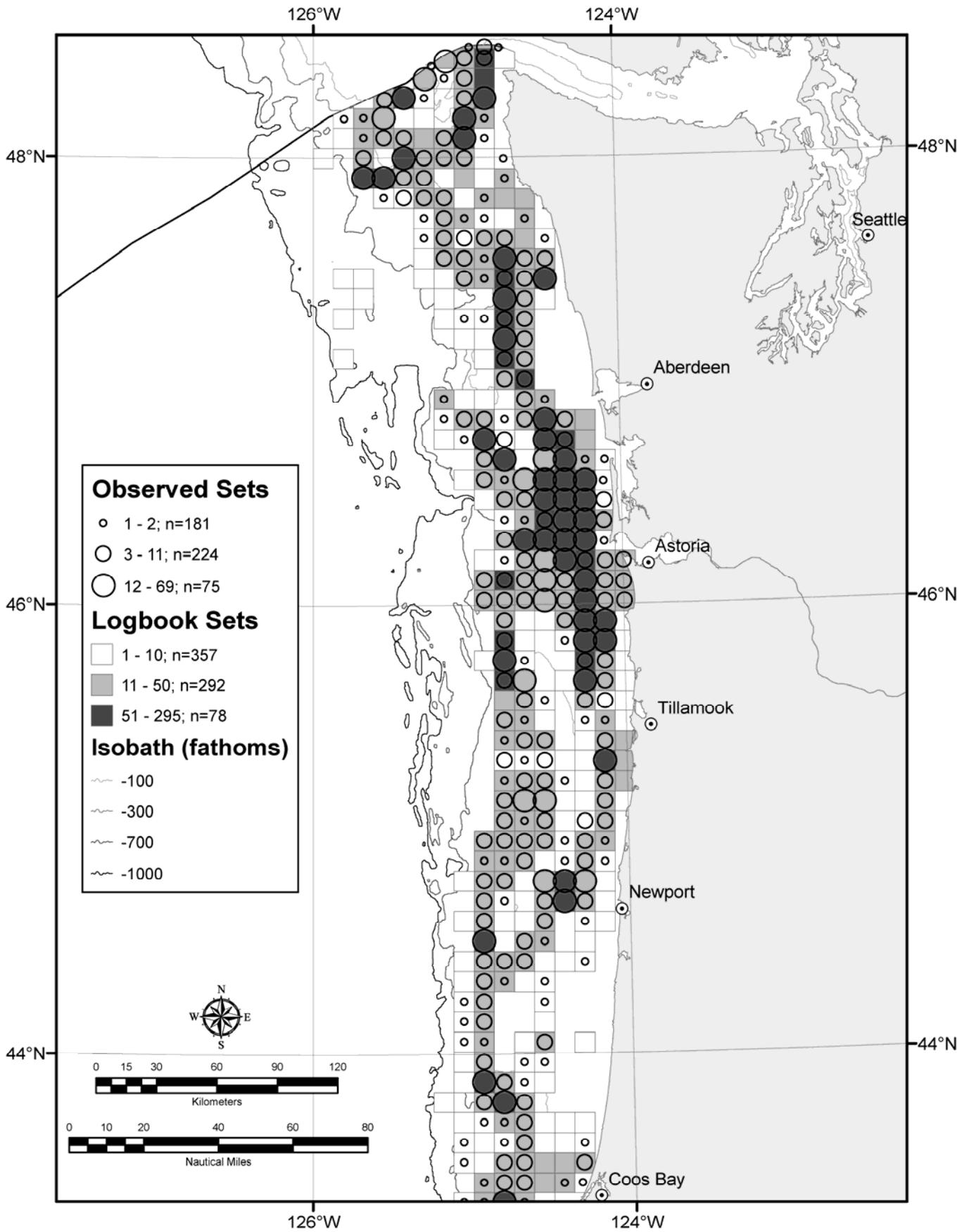


Figure 1a. Locations of observed and logbook bottom trawls north of Coos Bay, Oregon in 2006.

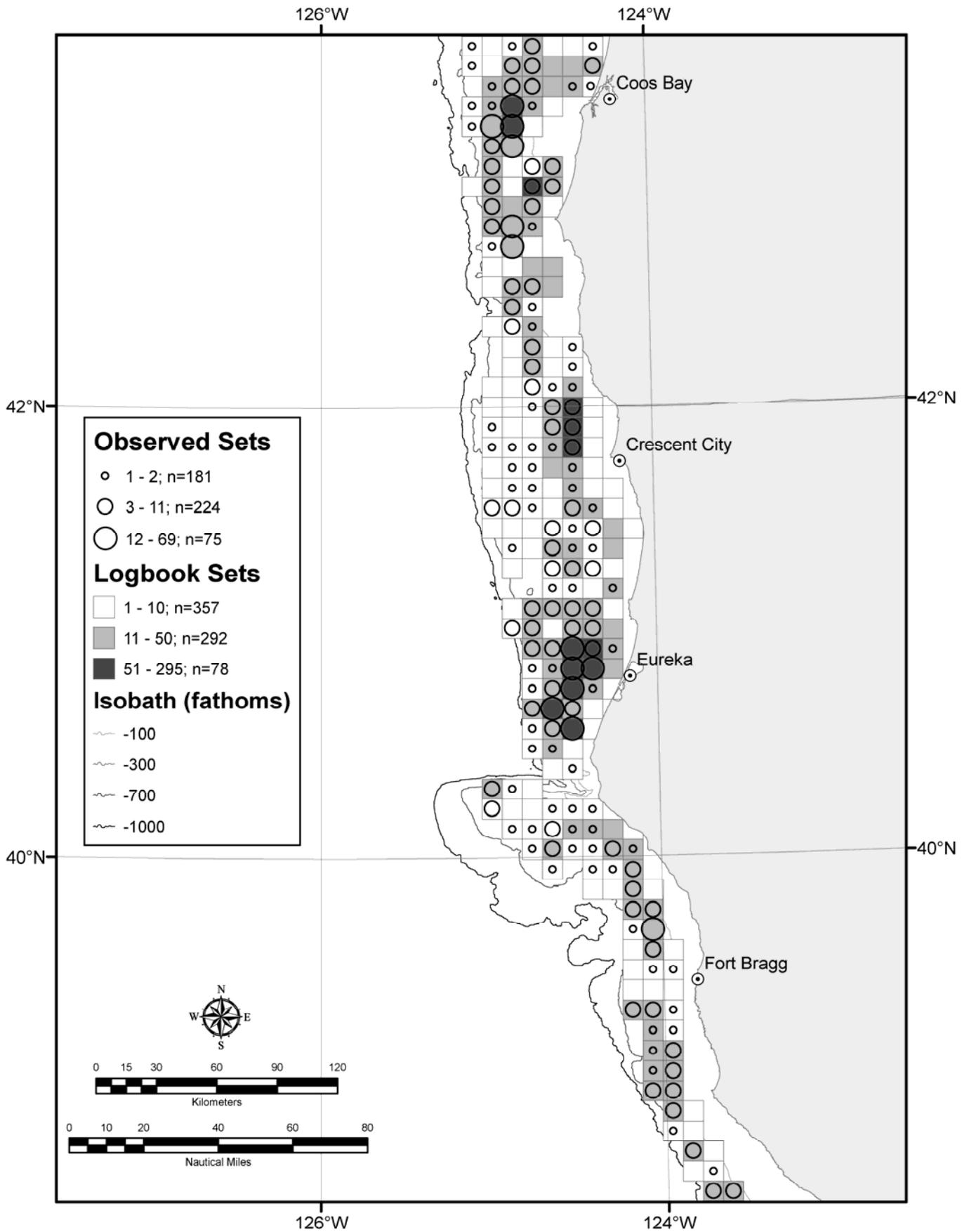


Figure 1b. Locations of observed and logbook bottom trawls south of Coos Bay, Oregon and north of San Francisco, California in 2006.

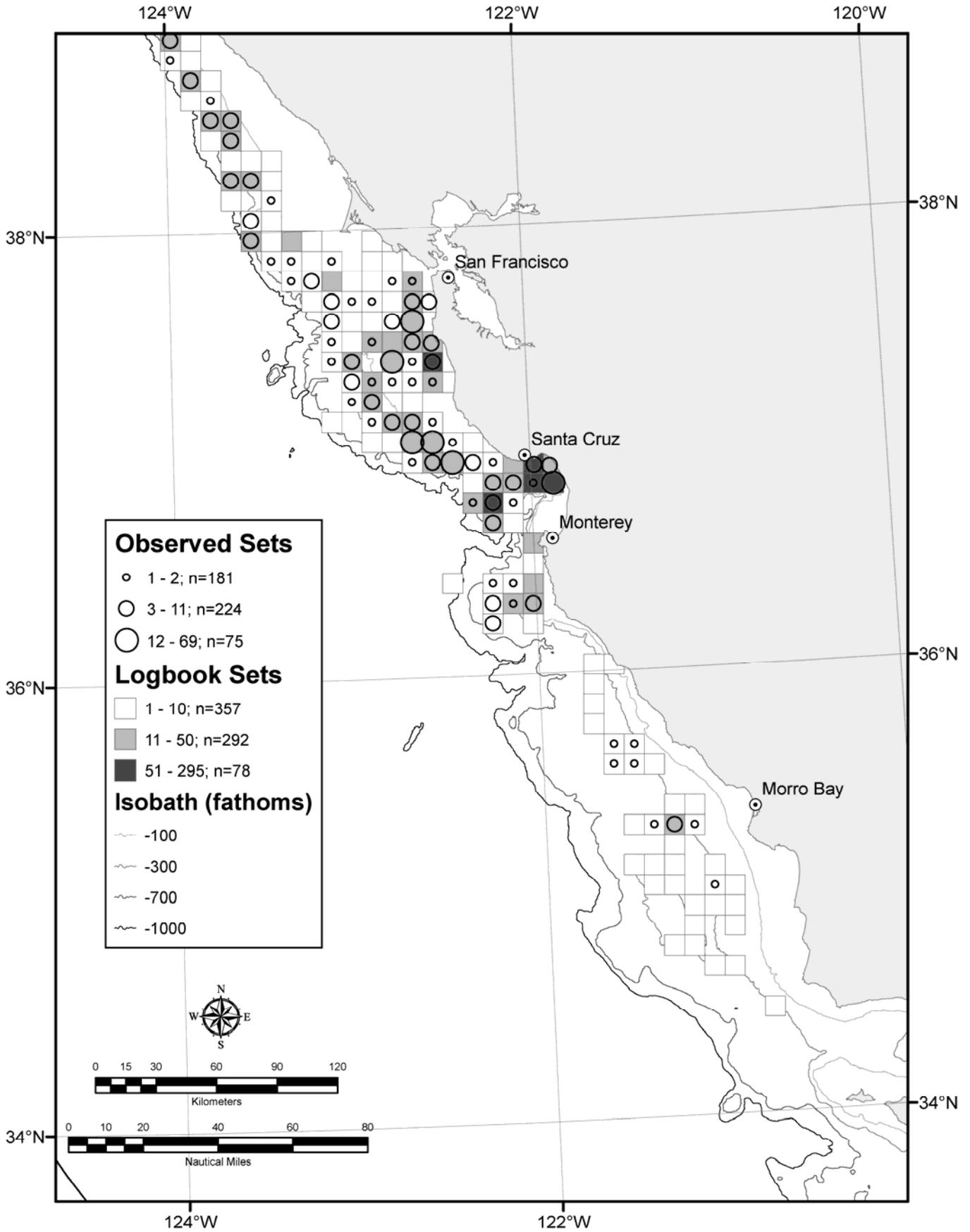


Figure 1c. Locations of observed and logbook bottom trawls south of San Francisco, California in 2006.

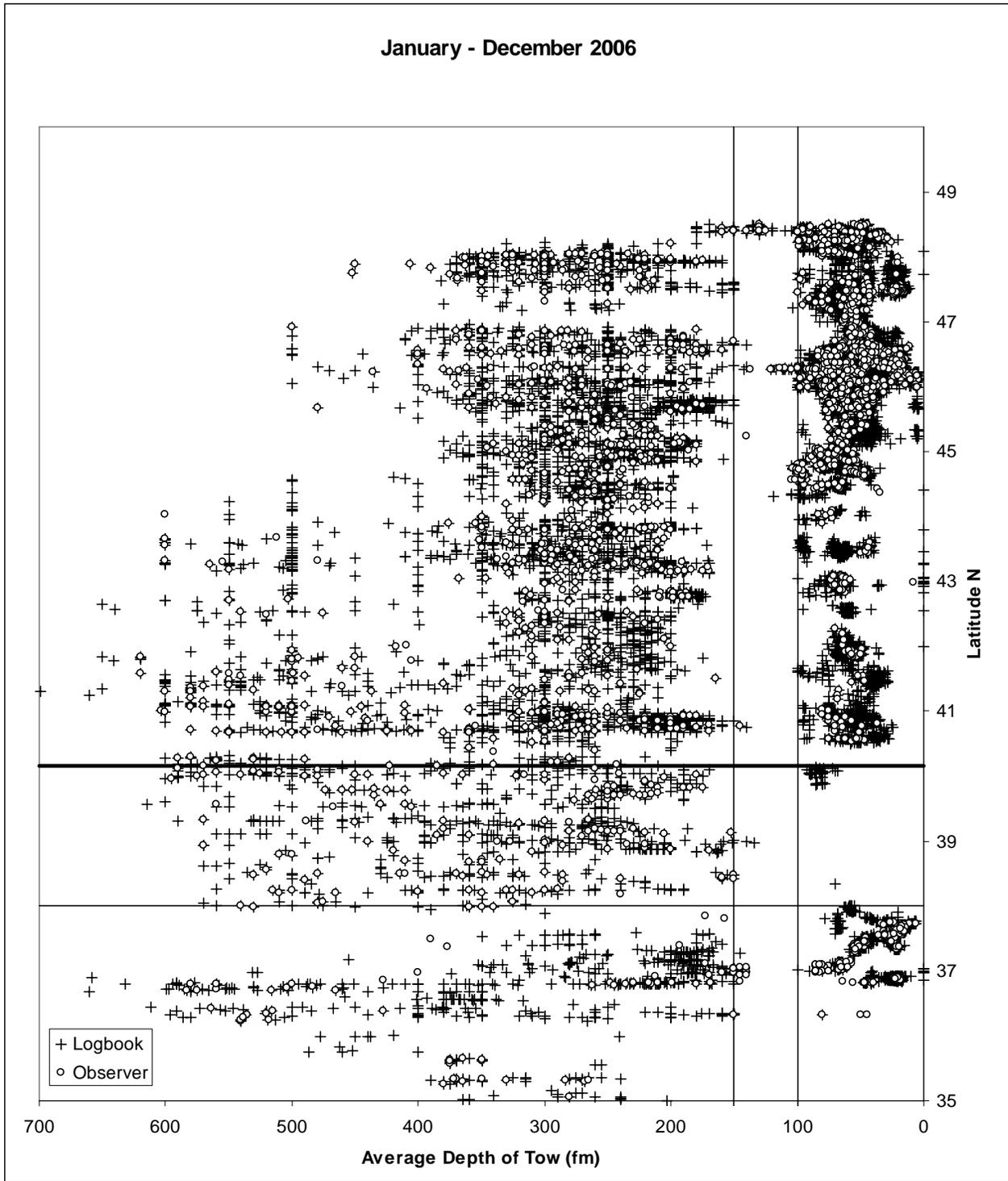


Figure 2. Plot locations of observed and logbook bottom trawls occurring coastwide. The vertical lines are located at depths of 100 and 150 fathoms. The bold horizontal line is located at 40° 10' N. latitude, which separates the north management area from the south management area. The lighter horizontal line at 38° N. latitude has been used for darkblotched rockfish management.

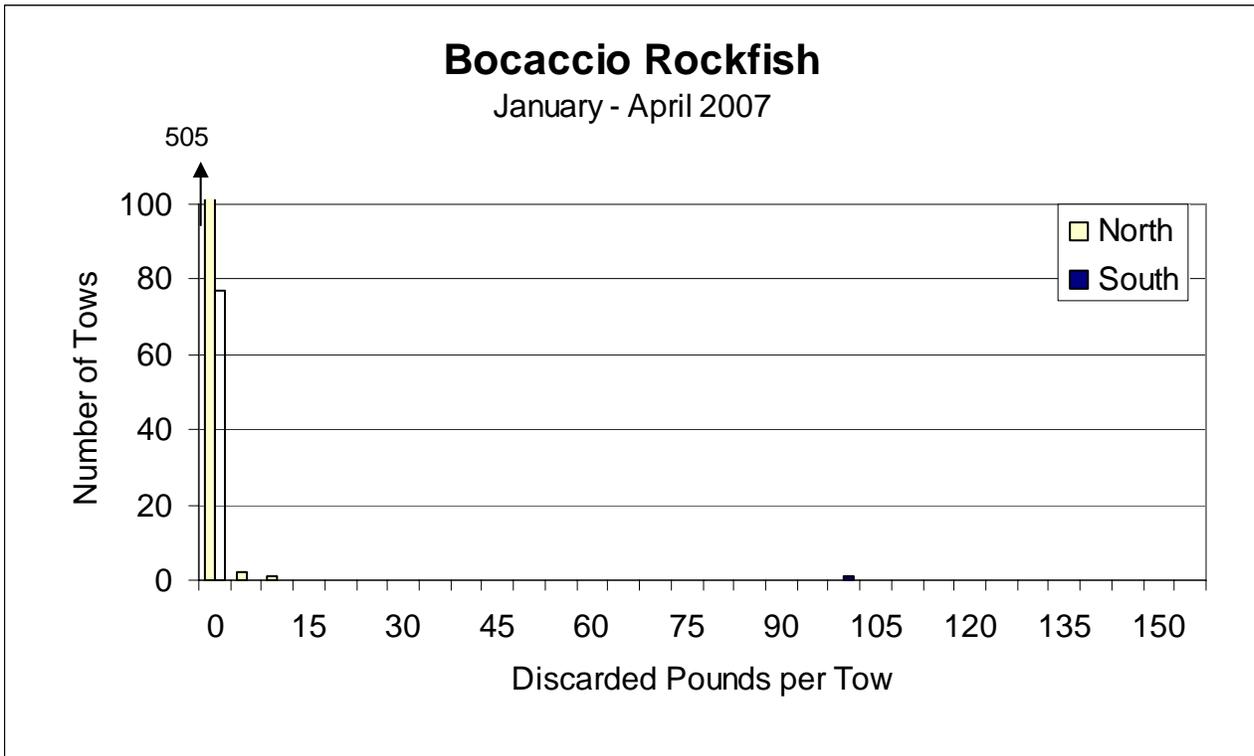
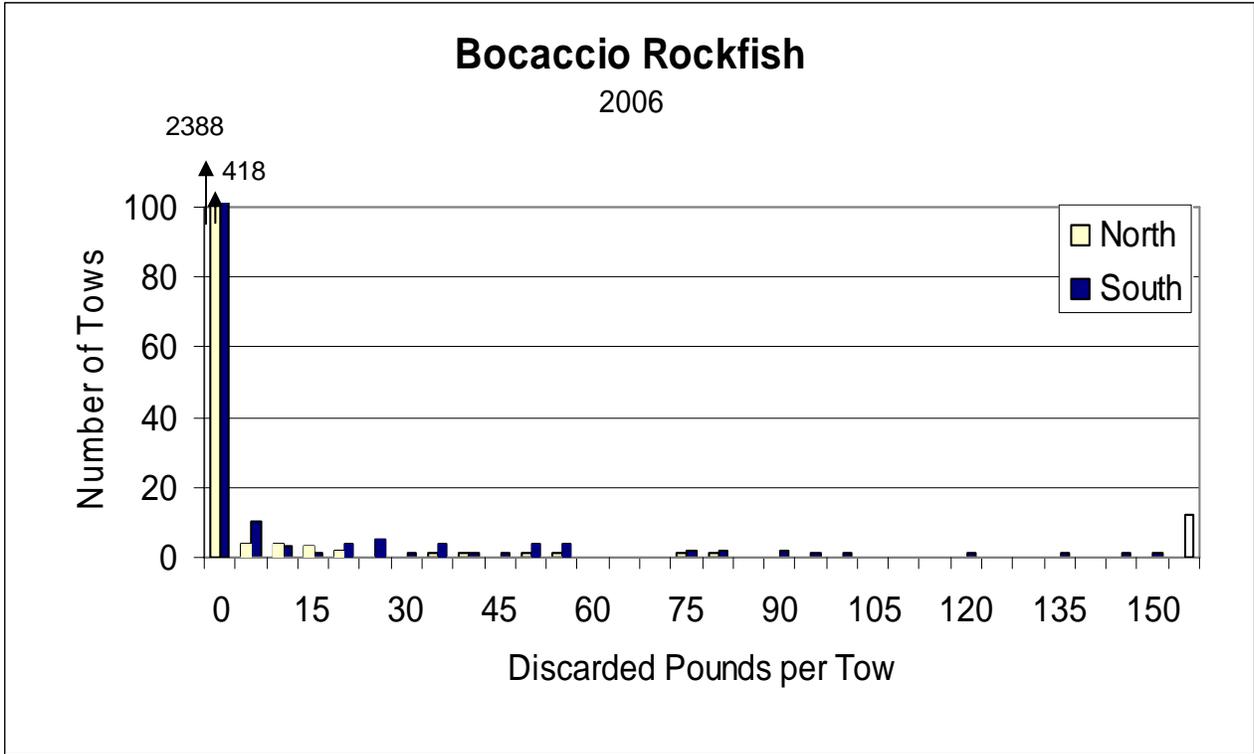


Figure 3a. Histograms of bocaccio rockfish with discarded pounds (in number of tows) in groundfish tows by area. Trips fishing mid-water trawl gear, Danish/Scottish seine, or fishing under an Exempted Fishing Permit were excluded.

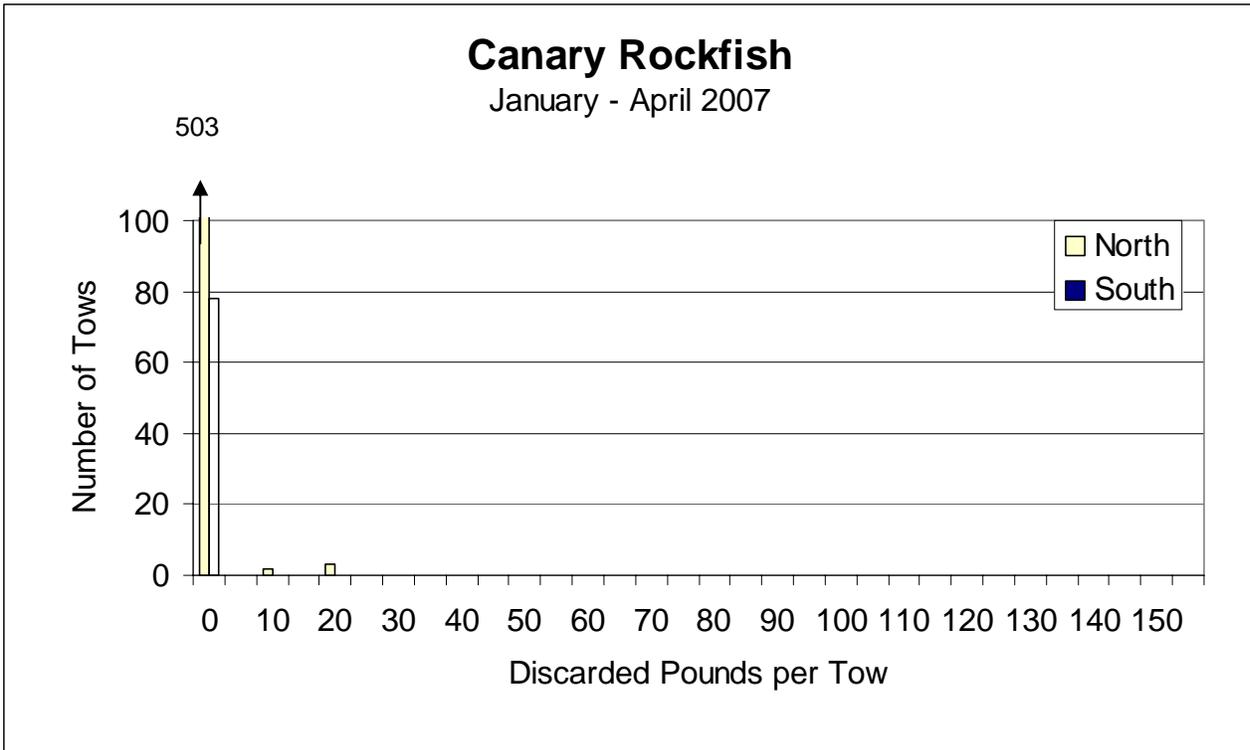
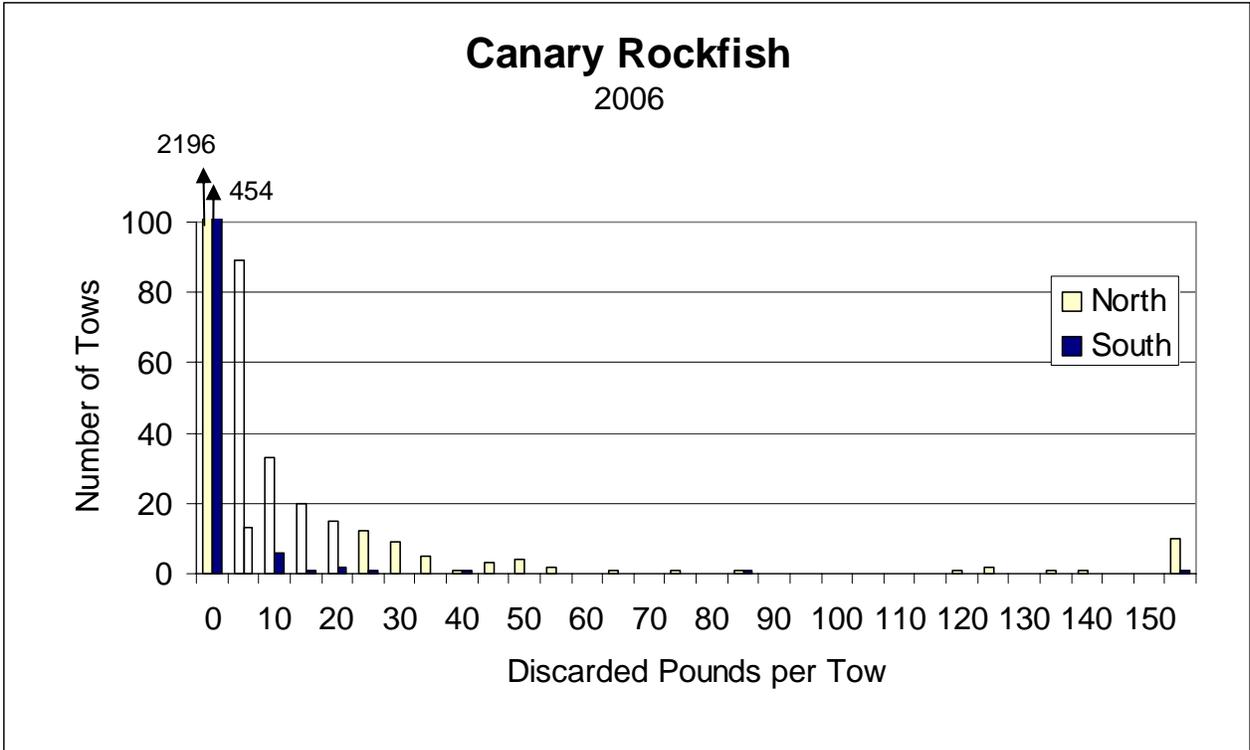


Figure 3b. Histograms of canary rockfish with discarded pounds (in number of tows) in groundfish tows by area. Trips fishing mid-water trawl gear, Danish/Scottish seine, or fishing under an Exempted Fishing Permit were excluded.

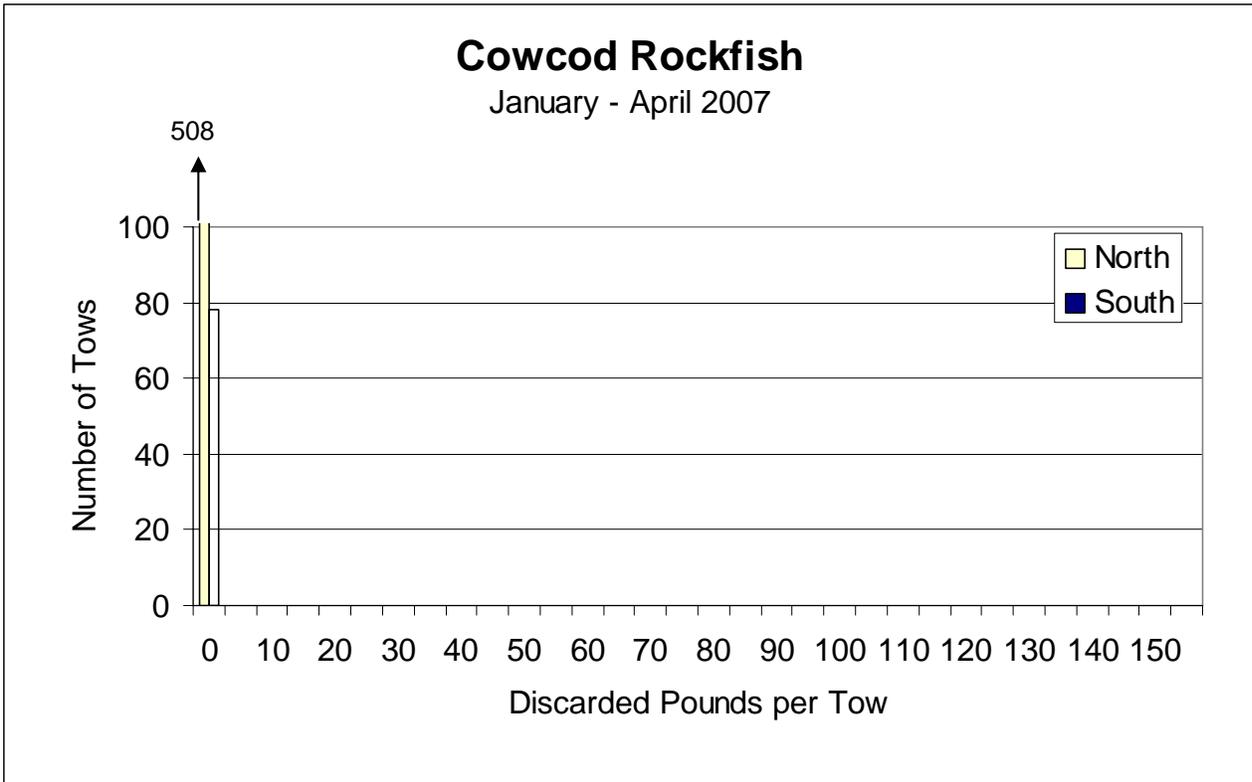
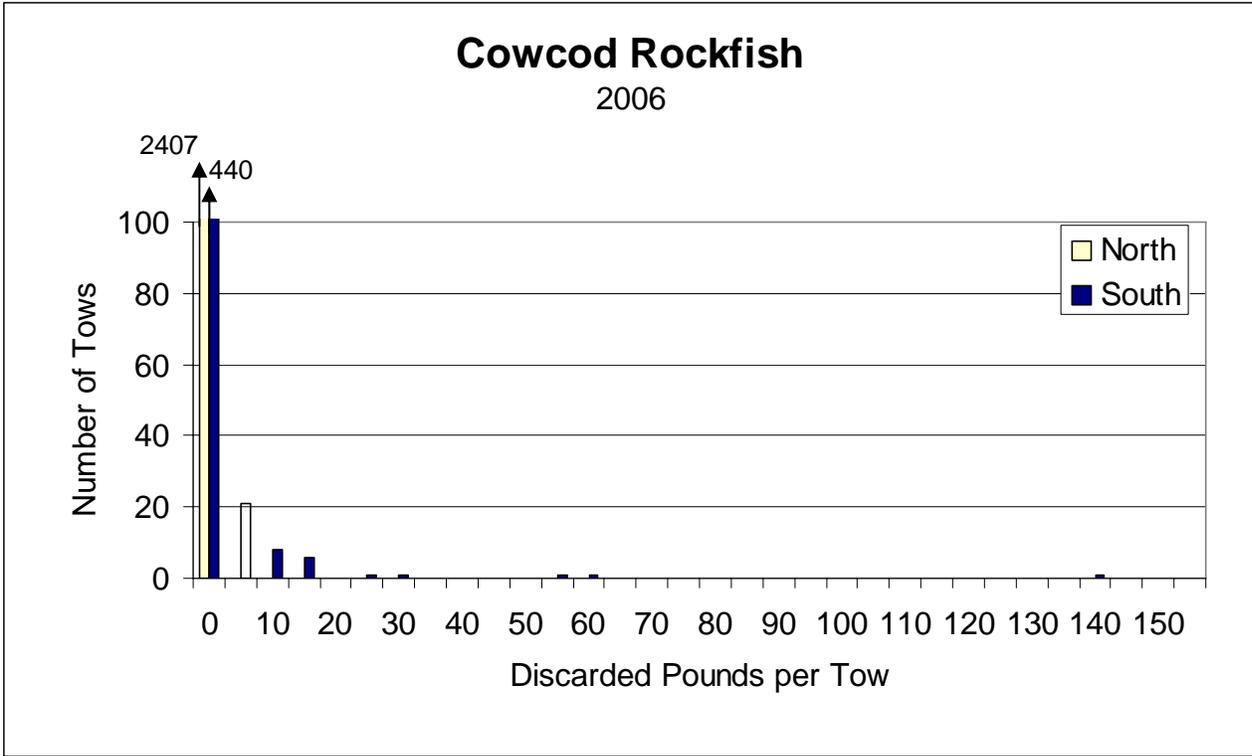


Figure 3c. Histograms of cowcod rockfish with discarded pounds (in number of tows) in groundfish tows by area. Trips fishing mid-water trawl gear, Danish/Scottish seine, or fishing under an Exempted Fishing Permit were excluded.

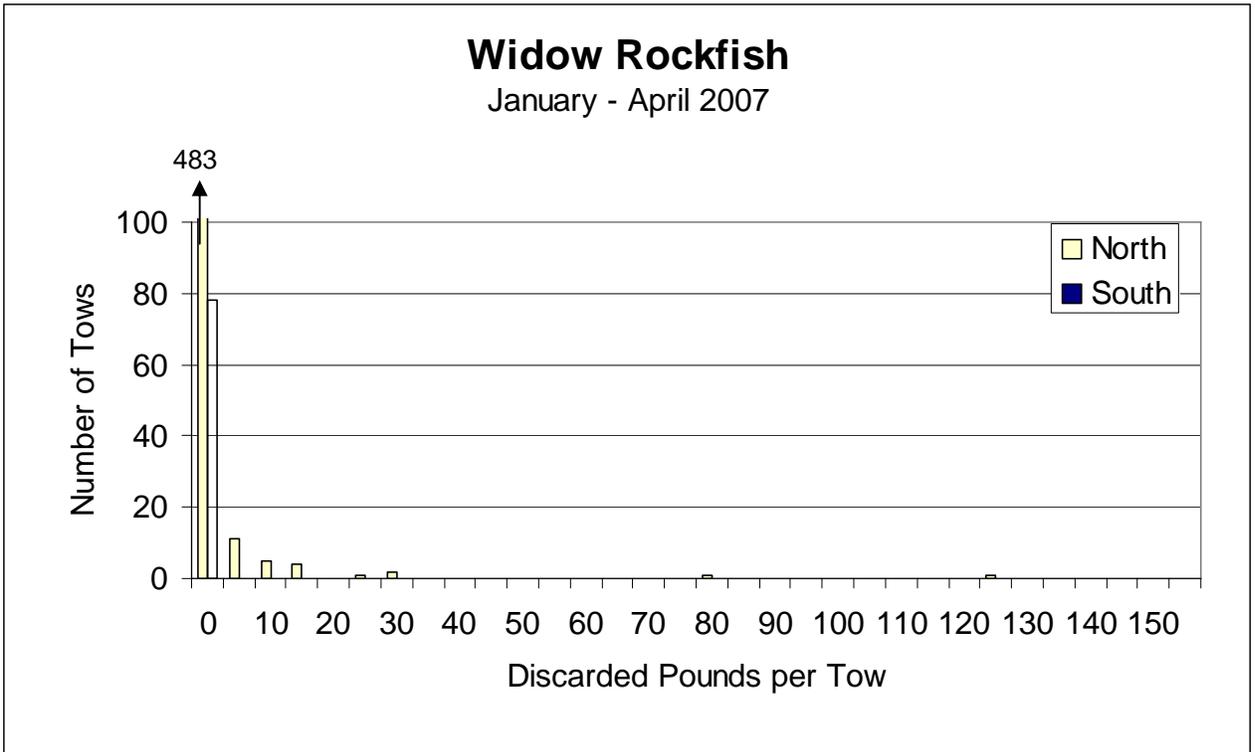
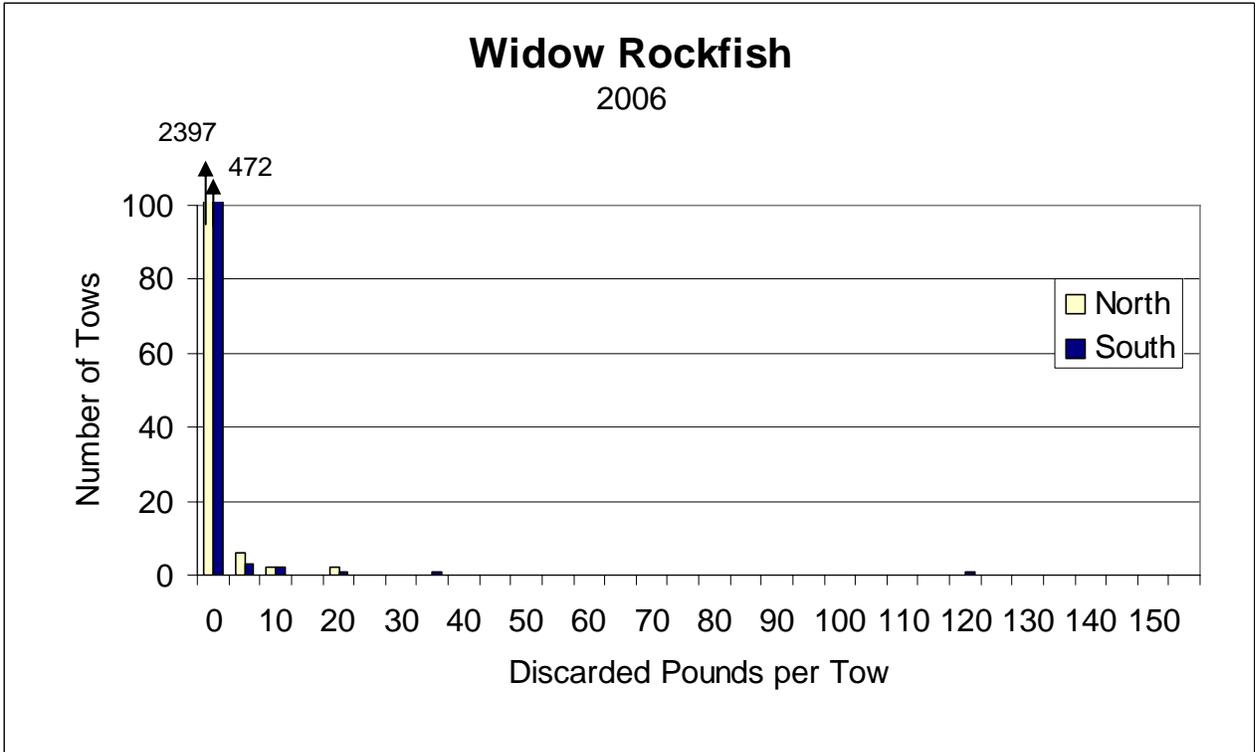


Figure 3d. Histograms of widow rockfish with discarded pounds (in number of tows) in groundfish tows by area. Trips fishing mid-water trawl gear, Danish/Scottish seine, or fishing under an Exempted Fishing Permit were excluded.

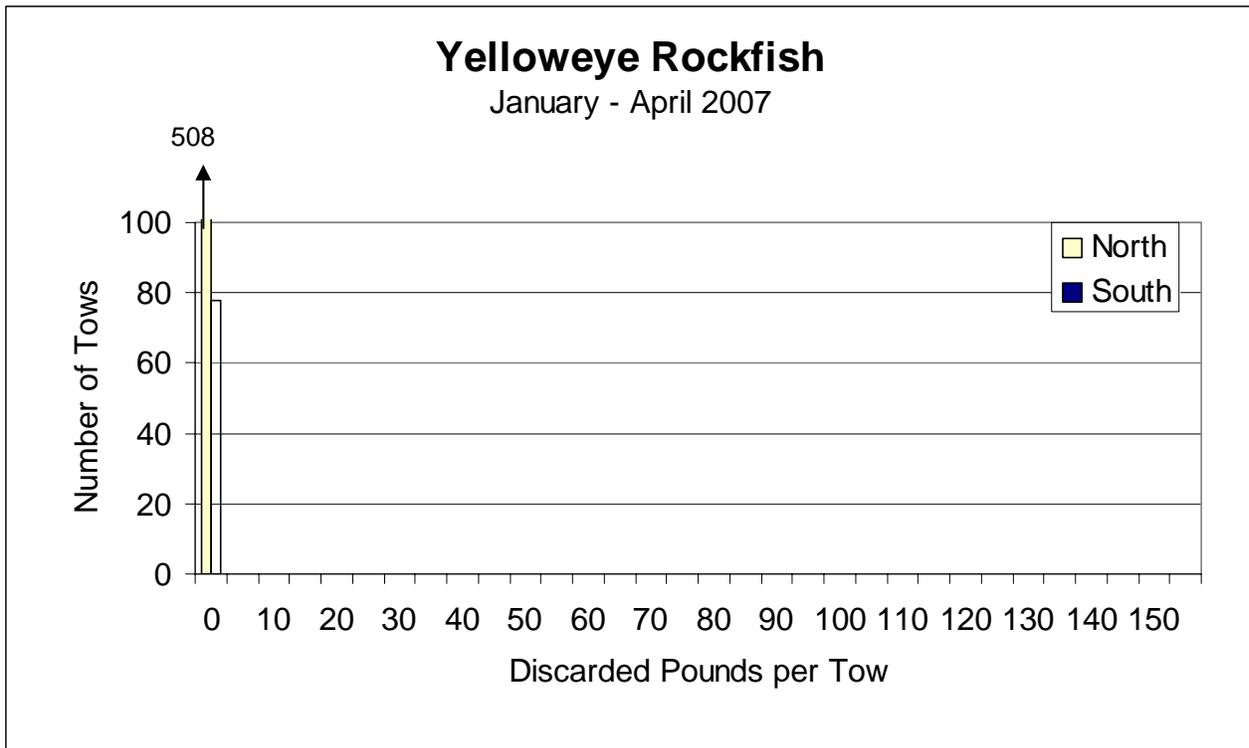
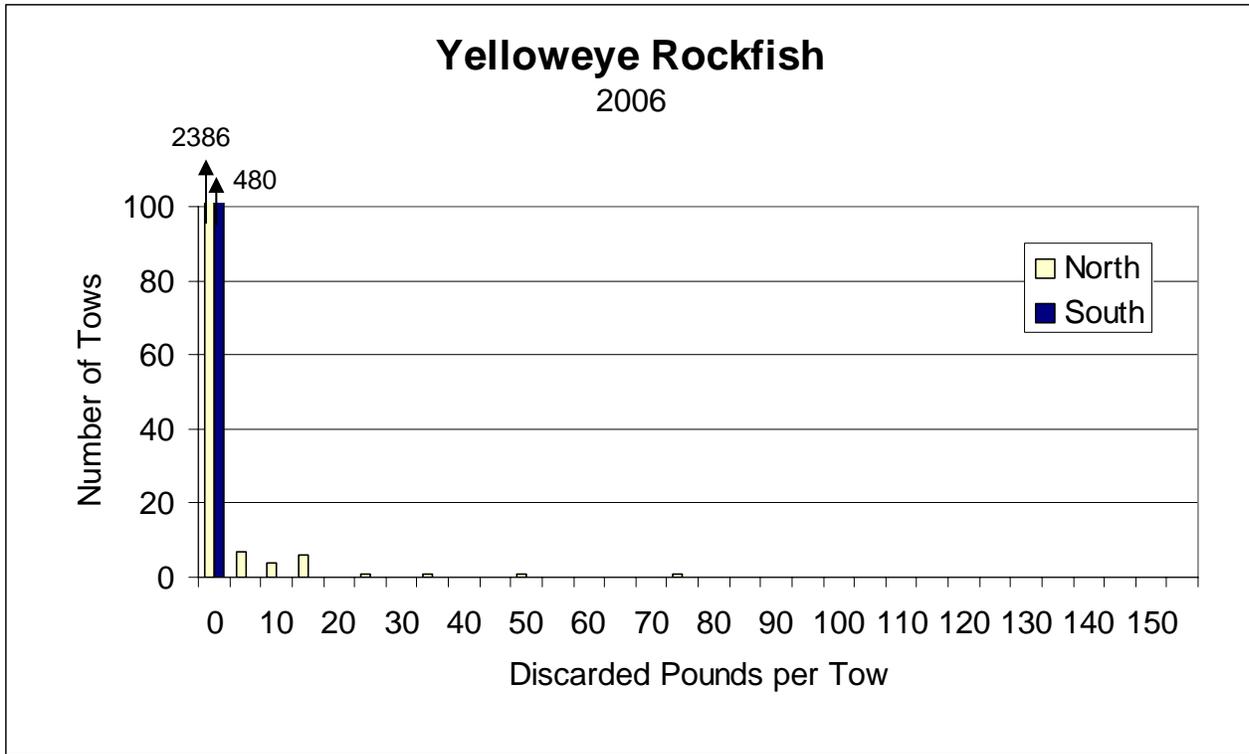


Figure 3e. Histograms of yelloweye rockfish with discarded pounds (in number of tows) in groundfish tows by area. Trips fishing mid-water trawl gear, Danish/Scottish seine, or fishing under an Exempted Fishing Permit were excluded.

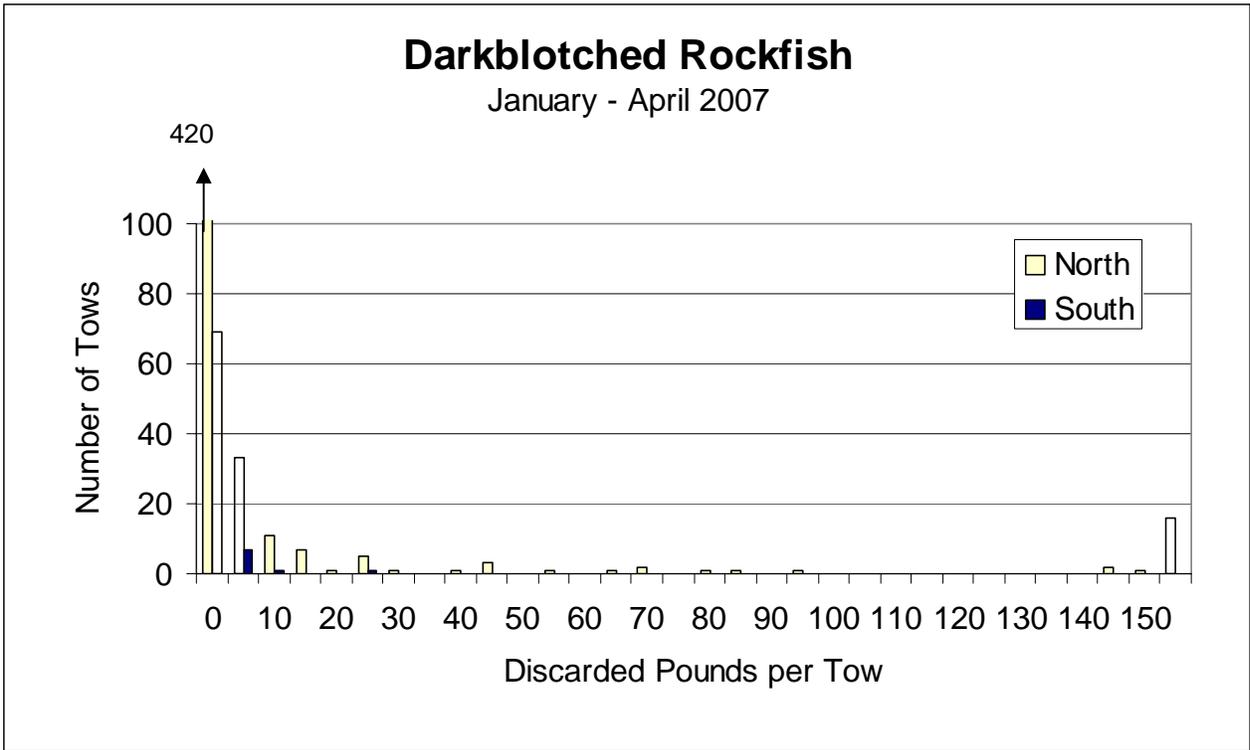
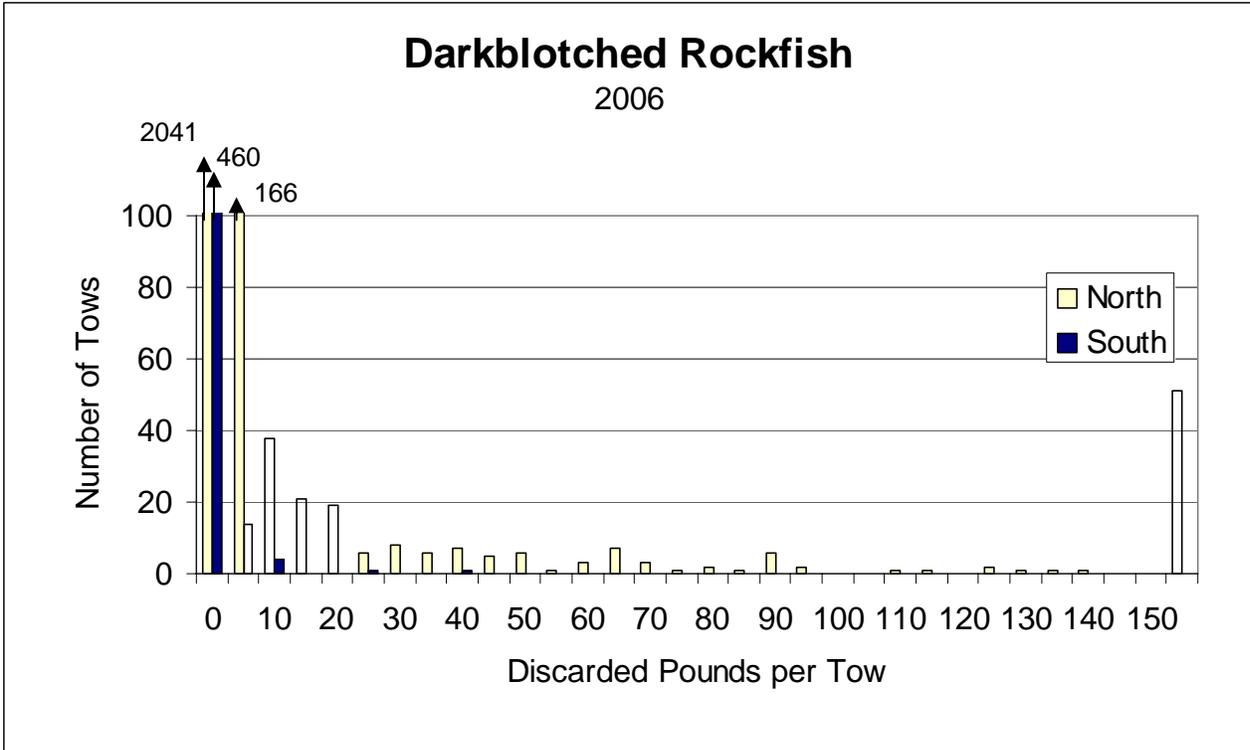


Figure 3f. Histograms of darkblotched rockfish with discarded pounds (in number of tows) in groundfish tows by area. Trips fishing mid-water trawl gear, Danish/Scottish seine, or fishing under an Exempted Fishing Permit were excluded.

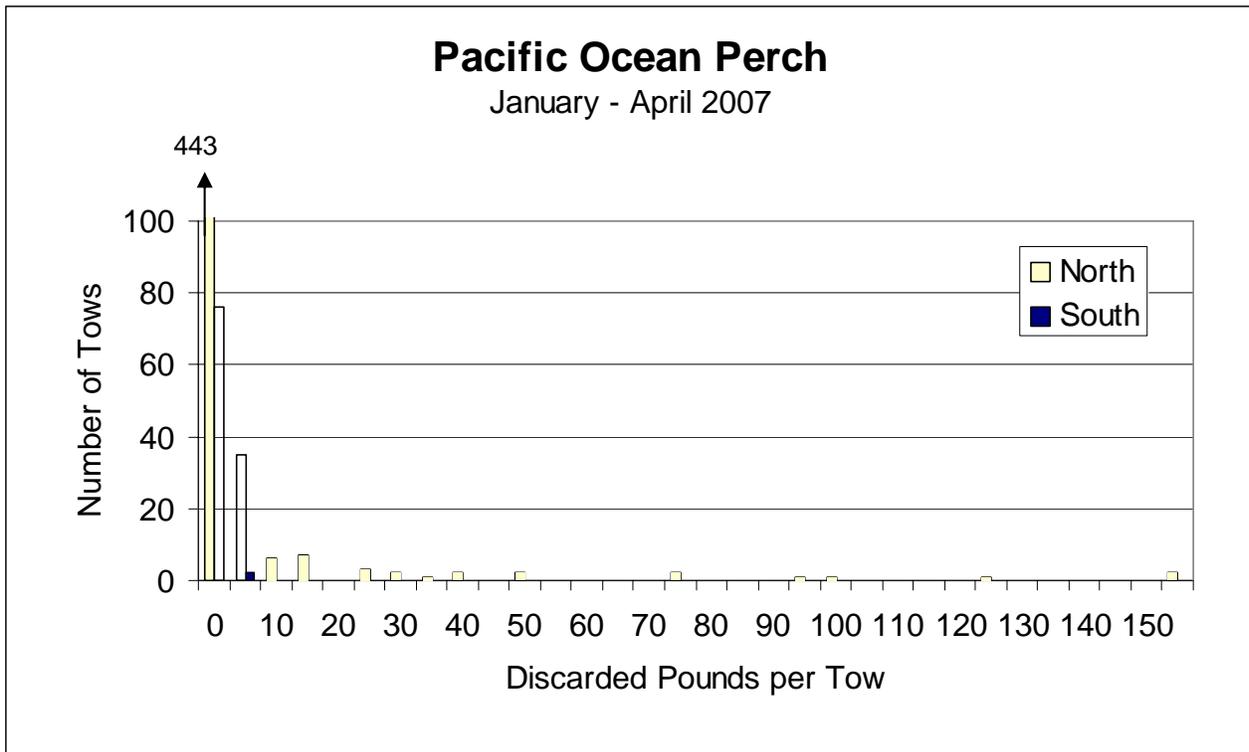
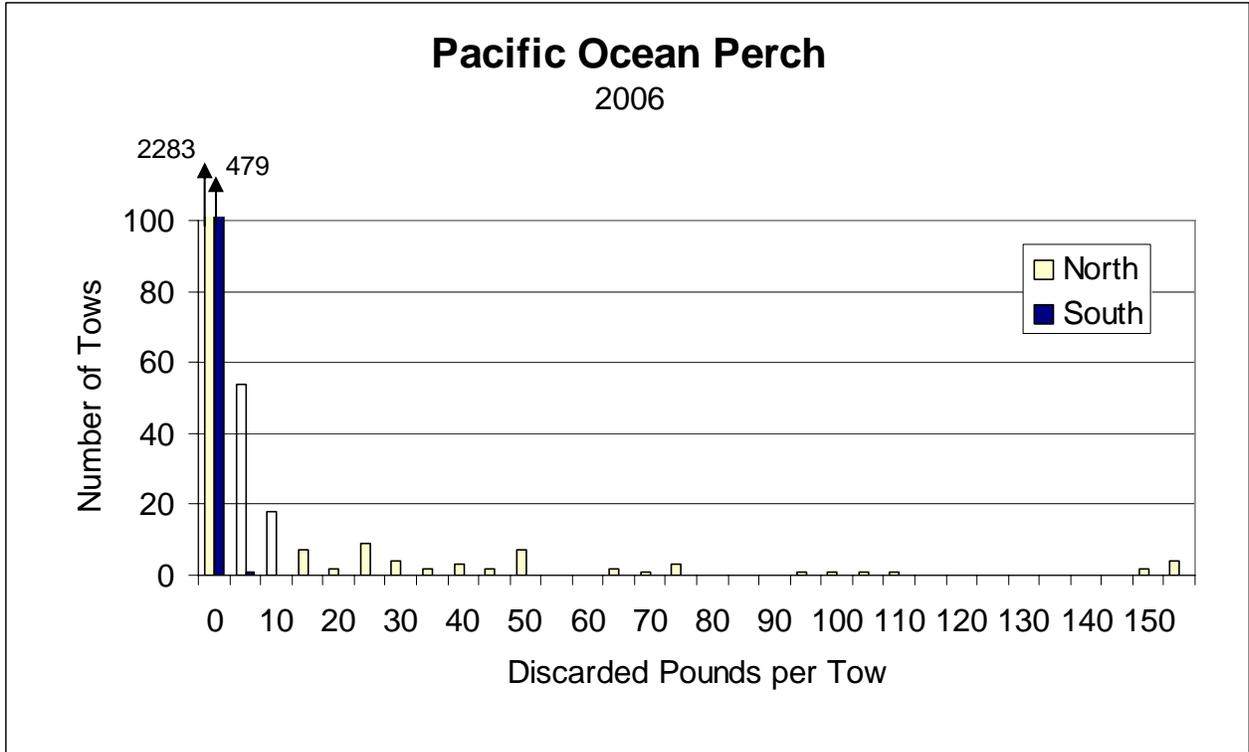


Figure 3g. Histograms of Pacific ocean perch with discarded pounds (in number of tows) in groundfish tows by area. Trips fishing mid-water trawl gear, Danish/Scottish seine, or fishing under an Exempted Fishing Permit were excluded.

Table 1. Sum of landings for observed and unobserved limited-entry trawl trips by year and port group. Danish/Scottish seine and midwater trawls were excluded.

Year	Port Group	Unobserved trips		Observed Trips		All trips
		Landed mts	Percent of unobserved mt by port	Landed mts	Percent of observed mt by port	Landed mts
2006	Bellingham	957	78%	265	22%	1,222
	Neah Bay	252	68%	121	32%	374
	Astoria	4,948	79%	1,298	21%	6,246
	Newport	1,150	72%	448	28%	1,597
	Coos Bay	2,136	80%	537	20%	2,673
	Crescent City	985	81%	237	19%	1,222
	Eureka	1,542	76%	499	24%	2,041
	Fort Bragg	1,001	80%	244	20%	1,245
	San Francisco	435	89%	53	11%	488
	Monterey	514	84%	99	16%	613
	Morro Bay	35	89%	4	11%	39
	ALL PORTS	13,954	79%	3,805	22%	17,760
Jan-Apr 2007	Bellingham	244	75%	83	25%	326
	Neah Bay	30	100%			30
	Astoria	1,702	79%	455	21%	2,157
	Newport	511	81%	116	19%	628
	Coos Bay	1,052	88%	137	12%	1,188
	Crescent City	481	87%	72	13%	553
	Eureka	697	85%	125	15%	822
	Fort Bragg	229	84%	44	16%	273
	San Francisco	97	49%	101	51%	197
	Monterey	64	100%			64
	Morro Bay	0.3	100%			0
	ALL PORTS	5,106	82%	1,132	18%	6,238

Table 2. Number of trips sampled by observers on limited-entry trawl vessels from January 1, 2006 to April 30, 2007 by port group and two-month period. Trips fishing California halibut, mid-water trawl gear, or Danish/Scottish seine were excluded from this table.

Year 2006	Jan-Feb		Mar-Apr		May-June		Jul-Aug		Sep-Oct		Nov-Dec		All 2006	
Port Group	n	% of observed trips in port group coastwide	n	% of observed trips in port group coastwide	n	% of observed trips in port group coastwide	n	% of observed trips in port group coastwide	n	% of observed trips in port group coastwide	n	% of observed trips in port group coastwide	n	% of observed trips in port group coastwide
Bellingham	3	5%	1	2%	1	1%	4	2%	4	6%			13	3%
Neah Bay	6	10%	11	19%	19	20%	36	22%			2	5%	74	15%
Astoria	15	25%	16	28%	17	18%	28	17%	22	32%	6	15%	104	21%
Newport	11	18%	5	9%	8	8%	20	12%	1	1%	3	8%	48	10%
Coos Bay	13	21%	5	9%	9	9%	4	2%	12	18%	12	31%	55	11%
Crescent City			4	7%	7	7%	4	2%	7	10%			22	5%
Eureka	6	10%	14	25%	7	7%	8	5%	10	15%	10	26%	55	11%
Fort Bragg	7	11%			13	14%	6	4%	3	4%			29	6%
San Francisco							31	19%			6	15%	37	8%
Monterey			1	2%	12	13%	22	13%	9	13%			44	9%
Morro Bay					3	3%							3	1%
All Ports	61	100	57	100%	96	100%	163	100%	68	100%	39	100%	484	100%

Year 2007	Jan-Feb		Mar-Apr		Jan - Apr 2007	
Port Group	n	% of observed trips in port group coastwide	n	% of observed trips in port group coastwide	n	% of observed trips in port group coastwide
Bellingham	3	5%	3	9%	6	7%
Astoria	21	38%	6	17%	27	30%
Newport	6	11%	4	11%	10	11%
Coos Bay	6	11%	9	26%	15	16%
Crescent City	7	13%	2	6%	9	10%
Eureka	9	16%	2	6%	11	12%
Fort Bragg	3	5%	1	3%	4	4%
San Francisco	1	2%	8	23%	9	10%
All Ports	56	100%	35	100%	91	100%

Table 3. Number of tows sampled by observers on limited-entry trawl vessels from January 1, 2006 through April 30, 2007 by area, depth, and two-month period. Trips fishing California halibut, mid-water trawl gear, and Danish/Scottish seine are excluded.

Year 2006

Area/Depth Group (fm)	Jan-Feb		Mar-Apr		May-June		Jul-Aug		Sep-Oct		Nov-Dec		2006	
	n	% of tows in depth group per area	n	% of tows in depth group per area	n	% of tows in depth group per area	n	% of tows in depth group per area	n	% of tows in depth group per area	n	% of tows in depth group per area	n	% of tows in depth group per area
North of 40° 10' N. lat.														
0-74.9	45	16%	77	30%	271	60%	467	57%	265	58%	3	2%	1,128	47%
75-149.9			2	1%	23	5%	229	28%	50	11%	1	1%	305	13%
> 150	230	84%	175	69%	159	35%	125	15%	141	31%	144	97%	974	40%
All Depths	275	100%	254	100%	453	100%	821	100%	456	100%	148	100%	2,407	100%
South of 40° 10' N. lat.														
0-74.9			2	29%	3	3%	137	65%	2	3%	13	39%	157	33%
75-149.9					18	15%	10	5%	36	46%			64	13%
> 150	34	100%	5	71%	96	82%	64	30%	40	51%	20	61%	259	54%
All Depths	34	100%	7	100%	117	100%	211	100%	78	100%	33	100%	480	100%
Coastwide														
0-74.9	45	15%	79	30%	274	48%	604	59%	267	50%	16	9%	1,285	45%
75-149.9			2	1%	41	7%	239	23%	86	16%	1	1%	369	13%
> 150	264	85%	180	69%	255	45%	189	18%	181	34%	164	91%	1,233	43%
All Depths	309	100%	261	100%	570	100%	1,032	100%	534	100%	181	100%	2,887	100%

January - April 2007

Area/Depth Group (fm)	Jan-Feb		Mar-Apr		Jan-Apr 2007	
	n	% of tows in depth group per area	n	% of tows in depth group per area	n	% of tows in depth group per area
North of 40° 10' N. lat.						
0-74.9			14	9%	14	3%
75-149.9			1	1%	1	0%
> 150	348	100%	145	91%	493	97%
All Depths	348	100%	160	100%	508	100%
South of 40° 10' N. lat.						
0-74.9	1	3%			1	1%
> 150	28	97%	49	100%	77	99%
All Depths	29	100%	49	100%	78	100%
Coastwide						
0-74.9	1	0%	14	7%	15	3%
75-149.9			1	0%	1	0%
> 150	376	100%	194	93%	570	97%
All Depths	377	100%	209	100%	586	100%

Table 4. Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

OVERFISHED SPECIES

A. Bocaccio Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	109	20%	25%	1,595	100%	21%	1,704	80%	21%
	Retained	425	80%	52%				425	20%	33%
	Total Catch	534	100%	42%	1,595	100%	20%	2,129	100%	23%
75-149.9	Discarded	245	38%	55%	4,773	95%	63%	5,018	88%	63%
	Retained	400	62%	48%	270	5%	57%	670	12%	51%
	Total Catch	645	100%	51%	5,043	100%	63%	5,688	100%	61%
> 150	Discarded	90	100%	20%	1,191	85%	16%	1,281	86%	16%
	Retained				206	15%	43%	206	14%	16%
	Total Catch	90	100%	7%	1,397	100%	17%	1,487	100%	16%
Total	Discarded	445	35%	100%	7,559	94%	100%	8,003	86%	100%
	Retained	825	65%	100%	476	6%	100%	1,301	14%	100%
	Total Catch	1,270	100%	100%	8,035	100%	100%	9,304	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	13	100%	100%	98	100%	100%	111	100%	100%
	Retained									
	Total Catch	13	100%	100%	98	100%	100%	111	100%	100%
Total	Discarded	13	100%	100%	98	100%	100%	111	100%	100%
	Retained									
	Total Catch	13	100%	100%	98	100%	100%	111	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

B. Canary Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	5,127	86%	72%	435	72%	80%	5,561	85%	72%
	Retained	836	14%	65%	173	28%	96%	1,009	15%	69%
	Total Catch	5,963	100%	71%	608	100%	84%	6,571	100%	72%
75-149.9	Discarded	1,988	82%	28%	84	91%	16%	2,073	82%	27%
	Retained	445	18%	35%	8	9%	4%	453	18%	31%
	Total Catch	2,434	100%	29%	92	100%	13%	2,526	100%	28%
> 150	Discarded	46	100%	1%	24	100%	4%	70	100%	1%
	Retained									
	Total Catch	46	100%	1%	24	100%	3%	70	100%	1%
Total	Discarded	7,161	85%	100%	543	75%	100%	7,704	84%	100%
	Retained	1,282	15%	100%	181	25%	100%	1,463	16%	100%
	Total Catch	8,443	100%	100%	724	100%	100%	9,167	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	70	100%	100%				70	100%	100%
	Retained									
	Total Catch	70	100%	100%				70	100%	100%
Total	Discarded	70	100%	100%				70	100%	100%
	Retained									
	Total Catch	70	100%	100%				70	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

C. Cowcod Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded				215	100%	43%	215	100%	43%
	Retained									
	Total Catch				215	100%	43%	215	100%	43%
75-149.9	Discarded				145	100%	29%	145	100%	29%
	Retained									
	Total Catch				145	100%	29%	145	100%	29%
> 150	Discarded				139	100%	28%	139	100%	28%
	Retained									
	Total Catch				139	100%	28%	139	100%	28%
Total	Discarded				498	100%	100%	498	100%	100%
	Retained									
	Total Catch				498	100%	100%	498	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

D. Darkblotched Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	630	100%	2%	2	100%	1%	632	100%	2%
	Retained	1						1		
	Total Catch	631	100%	1%	2	100%		633	100%	1%
75-149.9	Discarded	982	72%	3%	65	100%	45%	1,047	74%	3%
	Retained	374	28%	1%				374	26%	1%
	Total Catch	1,356	100%	2%	65	100%	1%	1,421	100%	2%
> 150	Discarded	37,471	55%	96%	78	1%	54%	37,549	49%	96%
	Retained	30,791	45%	99%	8,679	99%	100%	39,471	51%	99%
	Total Catch	68,262	100%	97%	8,758	100%	99%	77,020	100%	97%
Total	Discarded	39,083	56%	100%	145	2%	100%	39,228	50%	100%
	Retained	31,166	44%	100%	8,679	98%	100%	39,845	50%	100%
	Total Catch	70,249	100%	100%	8,825	100%	100%	79,073	100%	100%
January - April 2007										
0-74.9	Discarded	1	100%					1	100%	
	Retained									
	Total Catch	1	100%					1	100%	
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	9,800	35%	100%	50	100%	100%	9,850	35%	100%
	Retained	18,133	65%	100%				18,133	65%	100%
	Total Catch	27,933	100%	100%	50	100%	100%	27,983	100%	100%
Total	Discarded	9,801	35%	100%	50	100%	100%	9,851	35%	100%
	Retained	18,133	65%	100%				18,133	65%	100%
	Total Catch	27,934	100%	100%	50	100%	100%	27,984	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

E. Pacific Ocean Perch

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	1	5%					1	5%	
	Retained	20	95%					20	95%	
	Total Catch	21	100%					21	100%	
75-149.9	Discarded	458	93%	13%				458	93%	13%
	Retained	33	7%					33	7%	
	Total Catch	491	100%	2%				491	100%	2%
> 150	Discarded	2,968	12%	87%	3	100%	100%	2,971	12%	87%
	Retained	20,938	88%	100%				20,938	88%	100%
	Total Catch	23,906	100%	98%	3	100%	100%	23,909	100%	98%
Total	Discarded	3,427	14%	100%	3	100%	100%	3,430	14%	100%
	Retained	20,991	86%	100%				20,991	86%	100%
	Total Catch	24,418	100%	100%	3	100%	100%	24,421	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	1,526	15%	100%	7	100%	100%	1,533	15%	100%
	Retained	8,866	85%	100%				8,866	85%	100%
	Total Catch	10,392	100%	100%	7	100%	100%	10,399	100%	100%
Total	Discarded	1,526	15%	100%	7	100%	100%	1,533	15%	100%
	Retained	8,866	85%	100%				8,866	85%	100%
	Total Catch	10,392	100%	100%	7	100%	100%	10,399	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

F. Yelloweye Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	167	55%	52%				167	55%	52%
	Retained	135	45%	73%				135	45%	73%
	Total Catch	301	100%	60%				301	100%	60%
75-149.9	Discarded	146	77%	46%				146	77%	46%
	Retained	44	23%	24%				44	23%	24%
	Total Catch	190	100%	38%				190	100%	38%
> 150	Discarded	5	46%	2%				5	46%	2%
	Retained	6	54%	3%				6	54%	3%
	Total Catch	11	100%	2%				11	100%	2%
Total	Discarded	317	63%	100%				317	63%	100%
	Retained	185	37%	100%				185	37%	100%
	Total Catch	502	100%	100%				502	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

G. Widow Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	7	15%	10%	187	100%	92%	194	83%	71%
	Retained	39	85%	11%				39	17%	1%
	Total Catch	46	100%	11%	187	100%	5%	233	100%	6%
75-149.9	Discarded	13	5%	18%	16	7%	8%	29	6%	10%
	Retained	260	95%	74%	210	93%	6%	470	94%	12%
	Total Catch	273	100%	65%	226	100%	6%	499	100%	12%
> 150	Discarded	52	51%	73%				52	2%	19%
	Retained	51	49%	14%	3,213	100%	94%	3,264	98%	86%
	Total Catch	103	100%	24%	3,213	100%	89%	3,316	100%	82%
Total	Discarded	72	17%	100%	203	6%	100%	274	7%	100%
	Retained	350	83%	100%	3,423	94%	100%	3,773	93%	100%
	Total Catch	422	100%	100%	3,626	100%	100%	4,048	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	404	55%	100%				404	55%	100%
	Retained	335	45%	100%				335	45%	100%
	Total Catch	739	100%	100%				739	100%	100%
Total	Discarded	404	55%	100%				404	55%	100%
	Retained	335	45%	100%				335	45%	100%
	Total Catch	739	100%	100%				739	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

DTS SPP. and HAKE

H. Dover Sole

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	94,196	26%	26%	3,846	77%	8%	98,042	27%	24%
	Retained	268,702	74%	13%	1,132	23%		269,834	73%	12%
	Total Catch	362,898	100%	15%	4,978	100%	1%	367,876	100%	13%
75-149.9	Discarded	52,909	23%	15%	1,554	97%	3%	54,463	24%	13%
	Retained	173,807	77%	9%	44	3%		173,851	76%	7%
	Total Catch	226,716	100%	10%	1,598	100%		228,314	100%	8%
> 150	Discarded	210,747	12%	59%	44,320	12%	89%	255,067	12%	63%
	Retained	1,583,088	88%	78%	317,337	88%	100%	1,900,425	88%	81%
	Total Catch	1,793,835	100%	75%	361,657	100%	98%	2,155,492	100%	78%
Total	Discarded	357,852	15%	100%	49,720	14%	100%	407,572	15%	100%
	Retained	2,025,597	85%	100%	318,512	86%	100%	2,344,109	85%	100%
	Total Catch	2,383,449	100%	100%	368,232	100%	100%	2,751,682	100%	100%
January - April 2007										
0-74.9	Discarded	57	47%					57	47%	
	Retained	63	53%					63	53%	
	Total Catch	120	100%					120	100%	
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	70,135	7%	100%	9,171	6%	100%	79,306	7%	100%
	Retained	946,047	93%	100%	153,278	94%	100%	1,099,325	93%	100%
	Total Catch	1,016,182	100%	100%	162,449	100%	100%	1,178,631	100%	100%
Total	Discarded	70,192	7%	100%	9,171	6%	100%	79,363	7%	100%
	Retained	946,110	93%	100%	153,278	94%	100%	1,099,388	93%	100%
	Total Catch	1,016,302	100%	100%	162,449	100%	100%	1,178,751	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

I. Pacific Whiting

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	109,902	99%	35%	33,172	100%	45%	143,073	99%	37%
	Retained	1,630	1%	100%				1,630	1%	100%
	Total Catch	111,531	100%	35%	33,172	100%	45%	144,703	100%	37%
75-149.9	Discarded	15,264	100%	5%	6,392	100%	9%	21,656	100%	6%
	Retained									
	Total Catch	15,264	100%	5%	6,392	100%	9%	21,656	100%	6%
> 150	Discarded	190,194	100%	60%	34,161	100%	46%	224,355	100%	58%
	Retained									
	Total Catch	190,194	100%	60%	34,161	100%	46%	224,355	100%	57%
Total	Discarded	315,360	99%	100%	73,724	100%	100%	389,084	100%	100%
	Retained	1,630	1%	100%				1,630		100%
	Total Catch	316,989	100%	100%	73,724	100%	100%	390,714	100%	100%
January - April 2007										
0-74.9	Discarded	24	100%					24	100%	
	Retained									
	Total Catch	24	100%					24	100%	
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	74,878	100%	100%	15,523	100%	100%	90,401	100%	100%
	Retained									
	Total Catch	74,878	100%	100%	15,523	100%	100%	90,401	100%	100%
Total	Discarded	74,902	100%	100%	15,523	100%	100%	90,425	100%	100%
	Retained									
	Total Catch	74,902	100%	100%	15,523	100%	100%	90,425	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

J. Sablefish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	22,023	45%	16%	364	62%	5%	22,387	45%	15%
	Retained	26,766	55%	3%	222	38%		26,988	55%	3%
	Total Catch	48,789	100%	5%	586	100%		49,375	100%	4%
75-149.9	Discarded	30,821	22%	22%	788	23%	12%	31,609	22%	22%
	Retained	106,578	78%	13%	2,621	77%	2%	109,199	78%	11%
	Total Catch	137,398	100%	14%	3,410	100%	2%	140,808	100%	12%
> 150	Discarded	85,963	11%	62%	5,532	3%	83%	91,495	10%	63%
	Retained	697,218	89%	84%	160,658	97%	98%	857,876	90%	86%
	Total Catch	783,181	100%	81%	166,190	100%	98%	949,371	100%	83%
Total	Discarded	138,807	14%	100%	6,684	4%	100%	145,491	13%	100%
	Retained	830,562	86%	100%	163,501	96%	100%	994,063	87%	100%
	Total Catch	969,369	100%	100%	170,185	100%	100%	1,139,554	100%	100%
January - April 2007										
0-74.9	Discarded	2	39%					2	39%	
	Retained	3	61%					3	61%	
	Total Catch	5	100%					5	100%	
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	43,545	18%	100%	3,090	8%	100%	46,636	17%	100%
	Retained	192,065	82%	100%	36,839	92%	100%	228,904	83%	100%
	Total Catch	235,610	100%	100%	39,929	100%	100%	275,540	100%	100%
Total	Discarded	43,547	18%	100%	3,090	8%	100%	46,637	17%	100%
	Retained	192,068	82%	100%	36,839	92%	100%	228,907	83%	100%
	Total Catch	235,615	100%	100%	39,929	100%	100%	275,544	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

K. Longspine Thornyhead

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded									
	Retained	49	100%					49	100%	
	Total Catch	49	100%					49	100%	
75-149.9	Discarded									
	Retained	29	100%					29	100%	
	Total Catch	29	100%					29	100%	
> 150	Discarded	27,798	12%	100%	4,670	3%	100%	32,469	9%	100%
	Retained	203,693	88%	100%	133,689	97%	100%	337,383	91%	100%
	Total Catch	231,492	100%	100%	138,360	100%	100%	369,851	100%	100%
Total	Discarded	27,798	12%	100%	4,670	3%	100%	32,469	9%	100%
	Retained	203,772	88%	100%	133,689	97%	100%	337,461	91%	100%
	Total Catch	231,570	100%	100%	138,360	100%	100%	369,930	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	24,989	31%	100%	659	2%	100%	25,648	22%	100%
	Retained	54,906	69%	100%	37,309	98%	100%	92,215	78%	100%
	Total Catch	79,894	100%	100%	37,968	100%	100%	117,863	100%	100%
Total	Discarded	24,989	31%	100%	659	2%	100%	25,648	22%	100%
	Retained	54,906	69%	100%	37,309	98%	100%	92,215	78%	100%
	Total Catch	79,894	100%	100%	37,968	100%	100%	117,863	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

L. Shortspine Thornyhead

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	5	1%					5	1%	
	Retained	728	99%					728	99%	
	Total Catch	733	100%					733	100%	
75-149.9	Discarded	1,122	29%	4%	2	13%		1,125	29%	4%
	Retained	2,737	71%	2%	17	87%		2,754	71%	1%
	Total Catch	3,859	100%	2%	20	100%		3,879	100%	2%
> 150	Discarded	26,671	13%	96%	4,002	8%	100%	30,674	12%	96%
	Retained	173,379	87%	98%	45,076	92%	100%	218,455	88%	98%
	Total Catch	200,050	100%	98%	49,078	100%	100%	249,128	100%	98%
Total	Discarded	27,799	14%	100%	4,005	8%	100%	31,803	13%	100%
	Retained	176,843	86%	100%	45,093	92%	100%	221,937	87%	100%
	Total Catch	204,642	100%	100%	49,098	100%	100%	253,740	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	8,831	12%	100%	250	2%	100%	9,081	11%	100%
	Retained	66,364	88%	100%	10,860	98%	100%	77,224	89%	100%
	Total Catch	75,195	100%	100%	11,110	100%	100%	86,304	100%	100%
Total	Discarded	8,831	12%	100%	250	2%	100%	9,081	11%	100%
	Retained	66,364	88%	100%	10,860	98%	100%	77,224	89%	100%
	Total Catch	75,195	100%	100%	11,110	100%	100%	86,304	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

M. Mixed Thornyheads

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded Retained Total Catch									
75-149.9	Discarded Retained Total Catch									
> 150	Discarded Retained Total Catch	21,152 21,152 21,152	100% 100% 100%	100% 100% 100%	2,900 2,900 2,900	100% 100% 100%	100% 100% 100%	24,052 24,052 24,052	100% 100% 100%	100% 100% 100%
Total	Discarded Retained Total Catch	21,152 21,152 21,152	100% 100% 100%	100% 100% 100%	2,900 2,900 2,900	100% 100% 100%	100% 100% 100%	24,052 24,052 24,052	100% 100% 100%	100% 100% 100%
January - April 2007										
0-74.9	Discarded Retained Total Catch									
75-149.9	Discarded Retained Total Catch									
> 150	Discarded Retained Total Catch	28 3,094 3,122	1% 99% 100%	100% 100% 100%	335 335 335	100% 100% 100%	100% 100% 100%	363 3,094 3,457	10% 90% 100%	100% 100% 100%
Total	Discarded Retained Total Catch	28 3,094 3,122	1% 99% 100%	100% 100% 100%	335 335 335	100% 100% 100%	100% 100% 100%	363 3,094 3,457	10% 90% 100%	100% 100% 100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

FLATFISH

N. Arrowtooth Flounder

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	86,685	43%	32%				86,685	43%	31%
	Retained	113,084	57%	15%				113,084	57%	15%
	Total Catch	199,769	100%	20%				199,769	100%	20%
75-149.9	Discarded	116,939	31%	43%				116,939	31%	42%
	Retained	264,668	69%	36%				264,668	69%	36%
	Total Catch	381,606	100%	38%				381,606	100%	38%
> 150	Discarded	69,618	16%	25%	3,717	81%	100%	73,335	17%	26%
	Retained	359,638	84%	49%	900	19%	100%	360,538	83%	49%
	Total Catch	429,256	100%	42%	4,617	100%	100%	433,873	100%	43%
Total	Discarded	273,241	27%	100%	3,717	81%	100%	276,958	27%	100%
	Retained	737,390	73%	100%	900	19%	100%	738,290	73%	100%
	Total Catch	1,010,631	100%	100%	4,617	100%	100%	1,015,248	100%	100%
January - April 2007										
0-74.9	Discarded	46	87%					46	87%	
	Retained	7	13%					7	13%	
	Total Catch	53	100%					53	100%	
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	37,708	10%	100%	295	100%	100%	38,003	10%	100%
	Retained	349,118	90%	100%				349,118	90%	100%
	Total Catch	386,826	100%	100%	295	100%	100%	387,121	100%	100%
Total	Discarded	37,754	10%	100%	295	100%	100%	38,049	10%	100%
	Retained	349,124	90%	100%				349,124	90%	100%
	Total Catch	386,878	100%	100%	295	100%	100%	387,174	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

O. English Sole

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	113,736	35%	97%	18,696	55%	61%	132,432	37%	90%
	Retained	214,580	65%	63%	15,119	45%	68%	229,699	63%	64%
	Total Catch	328,316	100%	72%	33,815	100%	64%	362,131	100%	71%
75-149.9	Discarded	2,733	10%	2%	9,237	72%	30%	11,969	29%	8%
	Retained	25,619	90%	8%	3,598	28%	16%	29,218	71%	8%
	Total Catch	28,352	100%	6%	12,835	100%	24%	41,187	100%	8%
> 150	Discarded	425			2,632	43%	9%	3,057	3%	2%
	Retained	97,903	100%	29%	3,450	57%	16%	101,353	97%	28%
	Total Catch	98,328	100%	22%	6,082	100%	12%	104,411	100%	21%
Total	Discarded	116,893	26%	100%	30,565	58%	100%	147,459	29%	100%
	Retained	338,103	74%	100%	22,167	42%	100%	360,270	71%	100%
	Total Catch	454,996	100%	100%	52,732	100%	100%	507,728	100%	100%
January - April 2007										
0-74.9	Discarded	825	48%	51%				825	48%	15%
	Retained	888	52%	4%				888	52%	3%
	Total Catch	1,713	100%	7%				1,713	100%	5%
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	798	4%	49%	3,880	46%	100%	4,678	15%	85%
	Retained	21,550	96%	96%	4,627	54%	100%	26,177	85%	97%
	Total Catch	22,348	100%	93%	8,507	100%	100%	30,855	100%	95%
Total	Discarded	1,623	7%	100%	3,880	46%	100%	5,503	17%	100%
	Retained	22,437	93%	100%	4,627	54%	100%	27,064	83%	100%
	Total Catch	24,060	100%	100%	8,507	100%	100%	32,568	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

P. Petrale Sole

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	26,893	7%	80%	3,861	7%	45%	30,754	7%	73%
	Retained	343,442	93%	39%	52,131	93%	40%	395,573	93%	39%
	Total Catch	370,335	100%	40%	55,992	100%	41%	426,327	100%	40%
75-149.9	Discarded	2,685	5%	8%	1,810	4%	21%	4,495	5%	11%
	Retained	47,936	95%	5%	43,104	96%	33%	91,040	95%	9%
	Total Catch	50,621	100%	6%	44,914	100%	33%	95,535	100%	9%
> 150	Discarded	4,052	1%	12%	2,826	8%	33%	6,878	1%	16%
	Retained	492,063	99%	56%	34,174	92%	26%	526,237	99%	52%
	Total Catch	496,114	100%	54%	37,000	100%	27%	533,115	100%	51%
Total	Discarded	33,630	4%	100%	8,497	6%	100%	42,127	4%	100%
	Retained	883,440	96%	100%	129,409	94%	100%	1,012,849	96%	100%
	Total Catch	917,070	100%	100%	137,906	100%	100%	1,054,976	100%	100%
January - April 2007										
0-74.9	Discarded	114	8%	6%				114	8%	5%
	Retained	1,351	92%					1,351	92%	
	Total Catch	1,466	100%	1%				1,466	100%	
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	1,772	1%	94%	561	1%	100%	2,333	1%	95%
	Retained	278,101	99%	100%	58,918	99%	100%	337,019	99%	100%
	Total Catch	279,873	100%	99%	59,479	100%	100%	339,351	100%	100%
Total	Discarded	1,886	1%	100%	561	1%	100%	2,447	1%	100%
	Retained	279,452	99%	100%	58,918	99%	100%	338,370	99%	100%
	Total Catch	281,338	100%	100%	59,479	100%	100%	340,817	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

Q. Starry Flounder

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	281	7%	98%	2	1%	100%	284	6%	98%
	Retained	3,775	93%	72%	340	99%	97%	4,115	94%	74%
	Total Catch	4,057	100%	74%	342	100%	97%	4,399	100%	75%
75-149.9	Discarded									
	Retained	1,451	100%	28%				1,451	100%	26%
	Total Catch	1,451	100%	26%				1,451	100%	25%
> 150	Discarded	7	85%	2%				7	39%	2%
	Retained	1	15%		9	100%	3%	10	61%	
	Total Catch	8	100%		9	100%	3%	17	100%	
Total	Discarded	288	5%	100%	2	1%	100%	290	5%	100%
	Retained	5,227	95%	100%	349	99%	100%	5,576	95%	100%
	Total Catch	5,515	100%	100%	351	100%	100%	5,866	100%	100%
January - April 2007										
0-74.9	Discarded	1	66%	100%				1	66%	100%
	Retained	0	34%	100%				0	34%	1%
	Total Catch	1	100%	100%				1	100%	2%
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded									
	Retained				85	100%	100%	85	100%	99%
	Total Catch				85	100%	100%	85	100%	98%
Total	Discarded	1	66%	100%				1	1%	100%
	Retained	0	34%	100%	85	100%	100%	85	99%	100%
	Total Catch	1	100%	100%	85	100%	100%	86	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

R. Other Flatfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	174,765	45%	85%	18,790	36%	74%	193,555	44%	83%
	Retained	216,551	55%	63%	33,338	64%	61%	249,889	56%	63%
	Total Catch	391,316	100%	71%	52,128	100%	65%	443,444	100%	71%
75-149.9	Discarded	19,517	45%	9%	3,354	49%	13%	22,870	45%	10%
	Retained	24,026	55%	7%	3,425	51%	6%	27,451	55%	7%
	Total Catch	43,543	100%	8%	6,778	100%	8%	50,321	100%	8%
> 150	Discarded	12,472	11%	6%	3,102	15%	12%	15,574	12%	7%
	Retained	101,439	89%	30%	18,148	85%	33%	119,587	88%	30%
	Total Catch	113,912	100%	21%	21,249	100%	27%	135,161	100%	21%
Total	Discarded	206,754	38%	100%	25,245	31%	100%	231,999	37%	100%
	Retained	342,017	62%	100%	54,910	69%	100%	396,927	63%	100%
	Total Catch	548,771	100%	100%	80,155	100%	100%	628,926	100%	100%
January - April 2007										
0-74.9	Discarded	1,118	28%	19%				1,118	28%	11%
	Retained	2,815	72%	7%				2,815	72%	6%
	Total Catch	3,933	100%	9%				3,933	100%	7%
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	4,672	11%	81%	4,229	35%	100%	8,901	17%	89%
	Retained	37,137	89%	93%	7,693	65%	100%	44,830	83%	94%
	Total Catch	41,809	100%	91%	11,922	100%	100%	53,731	100%	93%
Total	Discarded	5,790	13%	100%	4,229	35%	100%	10,018	17%	100%
	Retained	39,952	87%	100%	7,693	65%	100%	47,645	83%	100%
	Total Catch	45,741	100%	100%	11,922	100%	100%	57,663	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

NEARSHORE ROCKFISH

S. Black Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	753	33%	100%	19	100%	100%	773	33%	100%
	Retained	1,543	67%	100%				1,543	67%	100%
	Total Catch	2,297	100%	100%	19	100%	100%	2,316	100%	100%
75-149.9	Discarded									
	Retained	0	100%					0	100%	
	Total Catch	0	100%					0	100%	
> 150	Discarded									
	Retained									
	Total Catch									
Total	Discarded	753	33%	100%	19	100%	100%	773	33%	100%
	Retained	1,544	67%	100%				1,544	67%	100%
	Total Catch	2,297	100%	100%	19	100%	100%	2,316	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

T. Other Nearshore Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	599	76%	100%	217	96%	67%	816	81%	88%
	Retained	186	24%	88%	10	4%	100%	196	19%	88%
	Total Catch	786	100%	97%	227	100%	68%	1,012	100%	88%
75-149.9	Discarded	2	7%		88	100%	27%	90	78%	10%
	Retained	26	93%	12%				26	22%	12%
	Total Catch	28	100%	3%	88	100%	27%	116	100%	10%
> 150	Discarded				17	100%	5%	17	100%	2%
	Retained									
	Total Catch				17	100%	5%	17	100%	2%
Total	Discarded	601	74%	100%	323	97%	100%	924	81%	100%
	Retained	212	26%	100%	10	3%	100%	222	19%	100%
	Total Catch	813	100%	100%	333	100%	100%	1,146	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

MINOR SHELF ROCKFISH

U. Yellowtail Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	887	13%	50%	474	60%	100%	1,362	18%	60%
	Retained	5,968	87%	57%	321	40%	100%	6,289	82%	59%
	Total Catch	6,855	100%	56%	795	100%	100%	7,650	100%	59%
75-149.9	Discarded	844	16%	47%				844	16%	37%
	Retained	4,409	84%	42%				4,409	84%	41%
	Total Catch	5,252	100%	43%				5,252	100%	41%
> 150	Discarded	49	92%	3%				49	92%	2%
	Retained	4	8%					4	8%	
	Total Catch	53	100%					53	100%	
Total	Discarded	1,780	15%	100%	474	60%	100%	2,254	17%	100%
	Retained	10,381	85%	100%	321	40%	100%	10,702	83%	100%
	Total Catch	12,161	100%	100%	795	100%	100%	12,956	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	27	30%	100%				27	30%	100%
	Retained	61	70%	100%				61	70%	100%
	Total Catch	88	100%	100%				88	100%	100%
Total	Discarded	27	30%	100%				27	30%	100%
	Retained	61	70%	100%				61	70%	100%
	Total Catch	88	100%	100%				88	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

V. Other Shelf Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	3,552	58%	28%	31,922	94%	62%	35,474	89%	55%
	Retained	2,554	42%	30%	2,018	6%	11%	4,572	11%	17%
	Total Catch	6,106	100%	29%	33,940	100%	49%	40,046	100%	44%
75-149.9	Discarded	8,484	84%	67%	17,205	81%	33%	25,689	82%	40%
	Retained	1,565	16%	18%	4,088	19%	23%	5,653	18%	22%
	Total Catch	10,049	100%	47%	21,293	100%	31%	31,342	100%	35%
> 150	Discarded	617	12%	5%	2,257	16%	4%	2,874	15%	4%
	Retained	4,427	88%	52%	11,603	84%	66%	16,030	85%	61%
	Total Catch	5,044	100%	24%	13,860	100%	20%	18,904	100%	21%
Total	Discarded	12,653	60%	100%	51,384	74%	100%	64,037	71%	100%
	Retained	8,546	40%	100%	17,709	26%	100%	26,255	29%	100%
	Total Catch	21,199	100%	100%	69,093	100%	100%	90,292	100%	100%
January - April 2007										
0-74.9	Discarded	1	100%					1	100%	
	Retained									
	Total Catch	1	100%					1	100%	
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	958	52%	100%	13	1%	100%	971	32%	100%
	Retained	899	48%	100%	1,179	99%	100%	2,078	68%	100%
	Total Catch	1,856	100%	100%	1,192	100%	100%	3,049	100%	100%
Total	Discarded	958	52%	100%	13	1%	100%	972	32%	100%
	Retained	899	48%	100%	1,179	99%	100%	2,078	68%	100%
	Total Catch	1,857	100%	100%	1,192	100%	100%	3,050	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

MINOR SLOPE ROCKFISH

W. Blackgill Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	2	100%					2	100%	
	Retained									
	Total Catch	2	100%					2	100%	
75-149.9	Discarded	3	100%					3	100%	
	Retained									
	Total Catch	3	100%					3	100%	
> 150	Discarded	696	99%	99%	175	8%	100%	870	31%	99%
	Retained	5	1%	100%	1,941	92%	100%	1,946	69%	100%
	Total Catch	701	100%	99%	2,115	100%	100%	2,816	100%	100%
Total	Discarded	701	99%	100%	175	8%	100%	875	31%	100%
	Retained	5	1%	100%	1,941	92%	100%	1,946	69%	100%
	Total Catch	706	100%	100%	2,115	100%	100%	2,821	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	106	100%	100%	32	100%	100%	137	100%	100%
	Retained									
	Total Catch	106	100%	100%	32	100%	100%	137	100%	100%
Total	Discarded	106	100%	100%	32	100%	100%	137	100%	100%
	Retained									
	Total Catch	106	100%	100%	32	100%	100%	137	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

X. Other Slope Rockfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	31	4%		790	89%	2%	822	51%	1%
	Retained	693	96%	2%	95	11%		788	49%	1%
	Total Catch	724	100%	1%	885	100%	1%	1,609	100%	1%
75-149.9	Discarded	1,060	56%	3%	935	83%	3%	1,995	66%	3%
	Retained	849	44%	3%	195	17%		1,044	34%	1%
	Total Catch	1,909	100%	3%	1,130	100%	1%	3,039	100%	2%
> 150	Discarded	35,393	53%	97%	34,193	34%	95%	69,587	41%	96%
	Retained	31,220	47%	95%	67,667	66%	100%	98,887	59%	98%
	Total Catch	66,614	100%	96%	101,860	100%	98%	168,474	100%	97%
Total	Discarded	36,485	53%	100%	35,918	35%	100%	72,403	42%	100%
	Retained	32,762	47%	100%	67,957	65%	100%	100,719	58%	100%
	Total Catch	69,247	100%	100%	103,875	100%	100%	173,122	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	10,229	41%	100%	10,127	39%	100%	20,355	40%	100%
	Retained	14,914	59%	100%	15,537	61%	100%	30,451	60%	100%
	Total Catch	25,143	100%	100%	25,664	100%	100%	50,807	100%	100%
Total	Discarded	10,229	41%	100%	10,127	39%	100%	20,355	40%	100%
	Retained	14,914	59%	100%	15,537	61%	100%	30,451	60%	100%
	Total Catch	25,143	100%	100%	25,664	100%	100%	50,807	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

OTHER ROUND FISH

Y. Lingcod

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	86,422	79%	72%	499	16%	92%	86,920	77%	73%
	Retained	23,491	21%	64%	2,574	84%	62%	26,065	23%	63%
	Total Catch	109,913	100%	70%	3,072	100%	66%	112,985	100%	70%
75-149.9	Discarded	23,561	85%	20%	37	5%	7%	23,598	83%	20%
	Retained	4,021	15%	11%	659	95%	16%	4,681	17%	11%
	Total Catch	27,582	100%	18%	696	100%	15%	28,278	100%	18%
> 150	Discarded	9,268	50%	8%	6	1%	1%	9,274	47%	8%
	Retained	9,432	50%	26%	892	99%	22%	10,324	53%	25%
	Total Catch	18,700	100%	12%	898	100%	19%	19,599	100%	12%
Total	Discarded	119,251	76%	100%	542	12%	100%	119,792	74%	100%
	Retained	36,945	24%	100%	4,125	88%	100%	41,070	26%	100%
	Total Catch	156,196	100%	100%	4,667	100%	100%	160,862	100%	100%
January - April 2007										
0-74.9	Discarded	88	37%	4%				88	37%	4%
	Retained	150	63%	2%				150	63%	2%
	Total Catch	238	100%	2%				238	100%	2%
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	2,228	23%	96%				2,228	22%	96%
	Retained	7,318	77%	98%	566	100%	100%	7,884	78%	98%
	Total Catch	9,546	100%	98%	566	100%	100%	10,112	100%	98%
Total	Discarded	2,316	24%	100%				2,316	22%	100%
	Retained	7,468	76%	100%	566	100%	100%	8,034	78%	100%
	Total Catch	9,784	100%	100%	566	100%	100%	10,350	100%	100%

Table 4. (cont.) Discarded, retained, and total catch (pounds) for 26 groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, or Danish/Scottish seine were excluded.

Z. Other Roundfish

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	2,486	2%	3%				2,486	2%	2%
	Retained	120,134	98%	66%				120,134	98%	59%
	Total Catch	122,620	100%	47%				122,620	100%	40%
75-149.9	Discarded	84	1%					84	1%	
	Retained	5,579	99%	3%				5,579	99%	3%
	Total Catch	5,663	100%	2%				5,663	100%	2%
> 150	Discarded	75,911	57%	97%	24,002	54%	100%	99,912	56%	97%
	Retained	57,620	43%	31%	20,531	46%	100%	78,151	44%	38%
	Total Catch	133,531	100%	51%	44,533	100%	100%	178,064	100%	58%
Total	Discarded	78,481	30%	100%	24,002	54%	100%	102,482	33%	100%
	Retained	183,333	70%	100%	20,531	46%	100%	203,864	67%	100%
	Total Catch	261,814	100%	100%	44,533	100%	100%	306,347	100%	100%
January - April 2007										
0-74.9	Discarded	5	67%					5	67%	
	Retained	2	33%					2	33%	
	Total Catch	7	100%					7	100%	
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	16,032	89%	100%	1,302	100%	100%	17,334	89%	100%
	Retained	2,044	11%	100%				2,044	11%	100%
	Total Catch	18,076	100%	100%	1,302	100%	100%	19,378	100%	100%
Total	Discarded	16,037	89%	100%	1,302	100%	100%	17,339	89%	100%
	Retained	2,046	11%	100%				2,046	11%	100%
	Total Catch	18,083	100%	100%	1,302	100%	100%	19,385	100%	100%

Table 5. Discarded, retained, and total catch (pounds) for 4 non-groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, and Danish/Scottish seine were excluded.

A. California Halibut

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded				6	2%	100%	6	2%	100%
	Retained				351	98%	99%	351	98%	99%
	Total Catch				357	100%	99%	357	100%	99%
75-149.9	Discarded				5	100%	1%	5	100%	1%
	Retained									
	Total Catch				5	100%	1%	5	100%	1%
> 150	Discarded									
	Retained									
	Total Catch									
Total	Discarded				6	2%	100%	6	2%	100%
	Retained				356	98%	100%	356	98%	100%
	Total Catch				362	100%	100%	362	100%	100%

Table 5. (cont.) Discarded, retained, and total catch (pounds) for 4 non-groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, and Danish/Scottish seine were

B. Pacific Halibut

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	88,280	100%	58%	32	100%	33%	88,312	100%	58%
	Retained									
	Total Catch									
75-149.9	Discarded	36,376	100%	24%				36,376	100%	24%
	Retained									
	Total Catch									
> 150	Discarded	28,829	100%	19%	65	100%	67%	28,894	100%	19%
	Retained									
	Total Catch									
Total	Discarded	153,486	100%	100%	96	100%	100%	153,583	100%	100%
	Retained									
	Total Catch									
January - April 2007										
0-74.9	Discarded	31	100%					31	100%	
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	40,089	100%	100%				40,089	100%	100%
	Retained									
	Total Catch									
Total	Discarded	40,121	100%	100%				40,121	100%	100%
	Retained									
	Total Catch									

Table 5. (cont.) Discarded, retained, and total catch (pounds) for 4 non-groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, and Danish/Scottish seine were

C. Chinook Salmon

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
YEAR 2006										
0-74.9	Discarded	9	100%	26%				9	100%	26%
	Retained									
	Total Catch	9	100%	26%				9	100%	26%
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	26	100%	74%				26	100%	74%
	Retained									
	Total Catch	26	100%	74%				26	100%	74%
Total	Discarded	35	100%	100%				35	100%	100%
	Retained									
	Total Catch	35	100%	100%				35	100%	100%
January - April 2007										
0-74.9	Discarded									
	Retained									
	Total Catch									
75-149.9	Discarded									
	Retained									
	Total Catch									
> 150	Discarded	89	100%	100%				89	100%	100%
	Retained									
	Total Catch	89	100%	100%				89	100%	100%
Total	Discarded	89	100%	100%				89	100%	100%
	Retained									
	Total Catch	89	100%	100%				89	100%	100%

Table 5. (cont.) Discarded, retained, and total catch (pounds) for 4 non-groundfish species or species groups by area and depth (fathoms) from January 1, 2006 through April 30, 2007 in groundfish tows. Trips fishing California halibut, mid-water trawl, and Danish/Scottish seine were

D. Coho Salmon

Depth Group (fm)	Disposition of Fish	NORTH of 40° 10' N. Lat.			SOUTH of 40° 10' N. Lat.			Coastwide		
		Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition	Pounds of species	Percent of disposition per depth group	Percent of depth group by disposition
January - April 2007										
0-74.9	Discarded Retained Total Catch									
75-149.9	Discarded Retained Total Catch									
> 150	Discarded Retained Total Catch	5	100%	100%				5	100%	100%
		5	100%	100%				5	100%	100%
Total	Discarded Retained Total Catch	5	100%	100%				5	100%	100%
		5	100%	100%				5	100%	100%

Table 6. Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

A. Arrowtooth Flounder

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
North	Summer	<75 FM	1003	32.5156	4.1368	6.3768	0.8204	42%	4%	
		75-150 FM	302	147.0886	27.7410	16.8285	3.1975	31%	5%	
		>150 FM	425	8.9128	3.8898	1.4568	0.6353	18%	7%	
	Winter	<75 FM	125	15.8080	4.8906	3.8731	1.2076	94%	3%	
		75-150 FM	3							
		>150 FM	549	17.2496	1.8916	2.0339	0.2241	16%	2%	
South	Summer	<75 FM	142	0		0				
		75-150 FM	64	0		0				
		>150 FM	200	2.8407	1.1674	0.4683	0.1914	83%	9%	
	Winter	<75 FM	15	0		0				
>150 FM		59	1.4536	0.5011	0.2478	0.0858	69%	15%		
2007										
North	Winter	<75 FM	14	2.3227	0.9993	0.8724	0.3773	87%	6%	
		75-150 FM	1							
		>150 FM	493	16.6403	2.0823	1.8694	0.2300	10%	1%	
South	Winter	<75 FM	1							
		>150 FM	77	0.7025	0.2966	0.0877	0.0376	100%		

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

B. Black Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.2439	0.1163	0.0478	0.0227	35%	12%
			75-150 FM	302	0		0		0%	
			>150 FM	425	0		0			
	Winter	<75 FM	125	0.5275	0.5275	0.1292	0.1303	26%	17%	
		75-150 FM	3							
		>150 FM	549	0		0				
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0		0			
Winter	<75 FM	15	0.4159	0.4245	0.0952	0.1008	100%			
	>150 FM	59	0		0					
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1			0			
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

C. Blackgill Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
2006	North	Summer	<75 FM	1003	0.0006	0.0006	0.0001	0.0001	100%	
			75-150 FM	302	0.0043	0.0043	0.0005	0.0005	100%	
			>150 FM	425	0.1278	0.0955	0.0209	0.0156	99%	2%
	Winter	<75 FM	125	0		0				
		75-150 FM	3							
		>150 FM	549	0.1330	0.0649	0.0157	0.0076	100%		
2006	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0.0968	0.0343	0.0160	0.0056	5%	2%
	Winter	<75 FM	15	0		0				
		>150 FM	59	0.1892	0.1101	0.0323	0.0186	62%	27%	
2007										
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0.0466	0.0246	0.0052	0.0028	100%	
2007	South	Winter	<75 FM	1						
			>150 FM	77	0.0751	0.0378	0.0094	0.0046	100%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

D. Bocaccio Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.0427	0.0214	0.0084	0.0042	20%	13%
75-150 FM			302	0.3083	0.1328	0.0353	0.0153	38%	20%	
>150 FM			425	0	0					
Winter		<75 FM	125	0.0028	0.0028	0.0007	0.0007	100%		
		75-150 FM	3							
		>150 FM	549	0.0342	0.0304	0.0040	0.0036	100%		
South	Summer	<75 FM	142	4.2235	3.0849	1.4652	1.0836	100%		
		75-150 FM	64	18.7941	5.2831	8.1137	2.4090	95%	3%	
		>150 FM	200	1.0472	0.6129	0.1726	0.1005	85%	9%	
	Winter	<75 FM	15	5.8510	4.2063	1.3390	0.9551	100%		
		>150 FM	59	0.0123	0.0124	0.0021	0.0021	100%		
2007	North	Winter	<75 FM	14	0	0	0			
75-150 FM			1							
>150 FM			493	0.0058	0.0042	0.0006	0.0005	100%		
South	Winter	<75 FM	1							
		>150 FM	77	0.2330	0.2329	0.0291	0.0294	100%		

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

E. California Halibut

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0			
			75-150 FM	302	0		0			
			>150 FM	425	0		0			
		Winter	<75 FM	125	0		0			
			75-150 FM	3						
			>150 FM	549	0		0			
	South	Summer	<75 FM	142	0.0191	0.0192	0.0066	0.0067	2%	1%
			75-150 FM	64	0		0		0%	
			>150 FM	200	0		0			
		Winter	<75 FM	15	0		0		0%	
			>150 FM	59	0		0			
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

F. Canary Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	1.8020	0.6865	0.3534	0.1333	88%	6%
75-150 FM			302	2.4795	0.5696	0.2837	0.0657	82%	8%	
>150 FM			425	0.0039	0.0037	0.0006	0.0006	100%		
Winter		<75 FM	125	2.1556	0.8222	0.5281	0.1669	70%	12%	
		75-150 FM	3							
		>150 FM	549	0.0135	0.0123	0.0016	0.0015	100%		
South	Summer	<75 FM	142	0.0405	0.0189	0.0140	0.0066	86%	13%	
		75-150 FM	64	0.3317	0.0909	0.1432	0.0415	91%	8%	
		>150 FM	200	0.0215	0.0216	0.0035	0.0036	100%		
	Winter	<75 FM	15	9.1395	5.3912	2.0916	1.2847	71%	18%	
		>150 FM	59	0		0				
2007	North	Winter	<75 FM	14	0		0			
75-150 FM			1							
>150 FM			493	0.0307	0.0145	0.0034	0.0016	100%		
South	Winter	<75 FM	1							
		>150 FM	77	0		0				

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

G. Chinook Salmon

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.0009	0.0009	0.0002	0.0002	100%	
			75-150 FM	302	0		0			
			>150 FM	425	0		0			
	Winter	<75 FM	125	0.0266	0.0187	0.0065	0.0045	100%		
		75-150 FM	3							
		>150 FM	549	0.0098	0.0052	0.0012	0.0006	100%		
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0		0			
Winter	<75 FM	15	0		0					
	>150 FM	59	0		0					
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0.0392	0.0157	0.0044	0.0018	100%	
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

H. Chum Salmon

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0			
			75-150 FM	302	0		0			
			>150 FM	425	0		0			
	North	Winter	<75 FM	125	0		0			
			75-150 FM	3						
			>150 FM	549	0		0			
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0		0			
South		Winter	<75 FM	15	0		0			
			>150 FM	59	0		0			
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

I. Coho Salmon

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species		
					lb/hr	se	ration	se	%	se	
2006	North	Summer	<75 FM	1003	0		0				
			75-150 FM	302	0		0				
			>150 FM	425	0		0				
	Winter	<75 FM	125	0		0					
		75-150 FM	3								
		>150 FM	549	0		0					
	South	Summer	<75 FM	142	0		0				
			75-150 FM	64	0		0				
			>150 FM	200	0		0				
Winter		<75 FM	15	0		0					
		>150 FM	59	0		0					
2007	North	Winter	<75 FM	14	0		0				
			75-150 FM	1							
			>150 FM	493	0.0023	0.0017	0.0003	0.0002	100%		
	South	Winter	<75 FM	1	0		0				
			>150 FM	77	0		0				

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

J. Cowcod Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
	North	Summer	<75 FM	1003	0		0			
			75-150 FM	302	0		0			
			>150 FM	425	0		0			
		Winter	<75 FM	125	0		0			
			75-150 FM	3						
			>150 FM	549	0		0			
	South	Summer	<75 FM	142	0.6842	0.4448	0.2374	0.1557	100%	
			75-150 FM	64	0.5704	0.2361	0.2462	0.1037	100%	
			>150 FM	200	0.1225	0.0557	0.0202	0.0092	100%	
		Winter	<75 FM	15	0		0			
			>150 FM	59	0		0			
2007										
	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

K. Darkblotched Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
2006	North	Summer	<75 FM	1003	0.2471	0.0348	0.0485	0.0068	100%	0%
			75-150 FM	302	1.2362	0.2484	0.1414	0.0289	73%	9%
			>150 FM	425	0.8200	0.4479	0.1340	0.0730	26%	11%
	Winter	<75 FM	125	0.0067	0.0045	0.0017	0.0011	100%		
		75-150 FM	3							
		>150 FM	549	13.3363	2.3304	1.5725	0.2803	59%	5%	
	South	Summer	<75 FM	142	0.0061	0.0043	0.0021	0.0015	100%	
			75-150 FM	64	0.2564	0.1694	0.1107	0.0752	100%	
			>150 FM	200	0.0603	0.0245	0.0099	0.0040	2%	1%
Winter		<75 FM	15	0		0				
		>150 FM	59	0.0289	0.0173	0.0049	0.0030	0%	0%	
2007										
2007	North	Winter	<75 FM	14	0.0474	0.0402	0.0178	0.0151	100%	
			75-150 FM	1						
			>150 FM	493	4.3249	1.1204	0.4859	0.1267	35%	6%
South	Winter	<75 FM	1							
		>150 FM	77	0.1189	0.0569	0.0149	0.0072	100%		

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

L. Dover sole

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
North	Summer	<75 FM	1003	36.7364	4.7638	7.2046	0.9300	26%	3%	
		75-150 FM	302	66.5829	10.3638	7.6178	1.2520	23%	3%	
		>150 FM	425	49.6327	5.5372	8.1125	1.0188	16%	2%	
	Winter	<75 FM	125	3.0317	1.0527	0.7428	0.2664	13%	3%	
		75-150 FM	3							
		>150 FM	549	29.1397	9.0228	3.4359	1.0599	8%	2%	
South	Summer	<75 FM	142	11.7283	1.3978	4.0688	0.4316	76%	3%	
		75-150 FM	64	6.1186	1.0322	2.6415	0.3501	97%	1%	
		>150 FM	200	32.2927	5.7471	5.3235	1.0116	12%	2%	
	Winter	<75 FM	15	3.6049	0.9584	0.8250	0.2352	100%		
		>150 FM	59	22.5534	6.8959	3.8455	1.2291	13%	4%	
2007										
North	Winter	<75 FM	14	2.8785	0.7944	1.0811	0.2226	47%	5%	
		75-150 FM	1							
		>150 FM	493	30.9504	4.7179	3.4770	0.5563	7%	1%	
South	Winter	<75 FM	1							
		>150 FM	77	21.8030	6.4273	2.7222	0.8154	6%	2%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

M. English Sole

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
North	Summer	<75 FM	1003	43.2350	4.1373	8.4791	0.7862	36%	2%	
		75-150 FM	302	3.4188	0.8744	0.3911	0.1007	11%	3%	
		>150 FM	425	0.0131	0.0084	0.0021	0.0014	3%	2%	
	Winter	<75 FM	125	14.9689	2.2779	3.6675	0.5618	16%	2%	
		75-150 FM	3							
		>150 FM	549	0.1473	0.0311	0.0174	0.0037	0%	0%	
South	Summer	<75 FM	142	40.8316	3.9671	14.1654	1.4254	51%	2%	
		75-150 FM	64	36.3729	4.1405	15.7028	1.7154	72%	5%	
		>150 FM	200	2.0773	0.8479	0.3424	0.1414	52%	7%	
	Winter	<75 FM	15	127.5121	38.8383	29.1819	7.5466	66%	5%	
		>150 FM	59	0.8127	0.4291	0.1386	0.0698	18%	8%	
2007										
North	Winter	<75 FM	14	41.6062	6.8060	15.6263	2.8326	48%	7%	
		75-150 FM	1							
		>150 FM	493	0.3522	0.1075	0.0396	0.0122	4%	1%	
South	Winter	<75 FM	1							
		>150 FM	77	9.2245	5.4885	1.1517	0.6750	46%	13%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

N. Lingcod

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
North	Summer	<75 FM	1003	33.3836	3.1115	6.5470	0.5912	80%	2%	
		75-150 FM	302	29.4099	4.0948	3.3648	0.4276	85%	3%	
		>150 FM	425	0.0079	0.0056	0.0013	0.0009	3%	2%	
	Winter	<75 FM	125	6.0154	1.8460	1.4738	0.4647	40%	6%	
		75-150 FM	3							
		>150 FM	549	3.4972	0.7108	0.4124	0.0832	52%	6%	
South	Summer	<75 FM	142	1.0316	0.3095	0.3579	0.1102	19%	9%	
		75-150 FM	64	0.1444	0.0573	0.0624	0.0247	5%	2%	
		>150 FM	200	0.0055	0.0040	0.0009	0.0007	1%	1%	
	Winter	<75 FM	15	3.7892	1.8792	0.8672	0.3941	13%	5%	
		>150 FM	59	0		0		0%		
2007										
North	Winter	<75 FM	14	4.4508	2.8904	1.6716	1.0459	37%	18%	
		75-150 FM	1							
		>150 FM	493	0.9831	0.3313	0.1104	0.0375	23%	6%	
South	Winter	<75 FM	1							
		>150 FM	77	0		0		0%		

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

O. Longspine Thornyhead

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0		0%	
75-150 FM			302	0		0		0%		
>150 FM			425	7.0547	0.8560	1.1531	0.1502	11%	1%	
Winter		<75 FM	125	0		0				
		75-150 FM	3							
		>150 FM	549	3.3261	0.4386	0.3922	0.0563	17%	2%	
South	Summer	<75 FM	142	0		0				
		75-150 FM	64	0		0				
		>150 FM	200	2.7367	0.5217	0.4511	0.0892	3%	1%	
	Winter	<75 FM	15	0		0				
		>150 FM	59	4.5810	1.7209	0.7811	0.3148	6%	2%	
2007	North	Winter	<75 FM	14	0		0			
75-150 FM			1							
>150 FM			493	11.0273	1.5740	1.2388	0.1948	31%	4%	
South	Winter	<75 FM	1							
		>150 FM	77	1.5671	0.3795	0.1957	0.0498	2%	0%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

P. Mixed Thornyheads

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0			
			75-150 FM	302	0		0			
			>150 FM	425	4.1793	0.9632	0.6831	0.1613	100%	
		Winter	<75 FM	125	0		0			
			75-150 FM	3						
			>150 FM	549	3.7417	1.0595	0.4412	0.1278	100%	
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	1.7804	1.1940	0.2935	0.1991	100%	
		Winter	<75 FM	15	0		0			
		>150 FM	59	2.5767	1.4963	0.4393	0.2654	100%		
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0.0124	0.0124	0.0014	0.0014	1%	1%
	South	Winter	<75 FM	1						
			>150 FM	77	0.7962	0.7929	0.0994	0.1005	100%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

Q. Other Flatfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	65.0705	4.3561	12.7613	0.8539	46%	2%
75-150 FM			302	24.5537	3.3797	2.8092	0.3988	45%	4%	
>150 FM			425	0.6095	0.1326	0.0996	0.0218	4%	1%	
Winter		<75 FM	125	36.7491	13.5260	9.0038	3.3802	31%	8%	
		75-150 FM	3							
		>150 FM	549	4.0961	1.0592	0.4830	0.1267	15%	4%	
South	Summer	<75 FM	142	38.1389	3.9938	13.2312	1.2950	27%	2%	
		75-150 FM	64	13.2064	1.7542	5.7014	0.7891	49%	4%	
		>150 FM	200	1.5739	0.4263	0.2595	0.0708	16%	4%	
	Winter	<75 FM	15	147.8438	48.3103	33.8349	9.0345	89%	2%	
		>150 FM	59	3.8477	1.2725	0.6561	0.2036	13%	4%	
2007	North	Winter	<75 FM	14	56.3616	9.2608	21.1680	3.6319	28%	3%
75-150 FM			1							
>150 FM			493	2.0617	0.2710	0.2316	0.0318	11%	2%	
South	Winter	<75 FM	1							
		>150 FM	77	10.0534	2.6981	1.2552	0.3630	35%	13%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

R. Other Nearshore Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.2357	0.1140	0.0462	0.0223	81%	9%
			75-150 FM	302	0.0023	0.0023	0.0003	0.0003	7%	7%
			>150 FM	425	0		0			
		Winter	<75 FM	125	0		0		0%	
			75-150 FM	3						
			>150 FM	549	0		0			
	South	Summer	<75 FM	142	0.2533	0.1407	0.0879	0.0497	89%	11%
			75-150 FM	64	0.3484	0.0903	0.1504	0.0427	100%	
			>150 FM	200	0.0154	0.0122	0.0025	0.0020	100%	
Winter		<75 FM	15	2.9731	1.5228	0.6804	0.3343	100%		
		>150 FM	59	0		0				
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

S. Other Roundfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
North	Summer	<75 FM	1003	0.3912	0.1078	0.0767	0.0211	1%	0%	
		75-150 FM	302	0.0863	0.0311	0.0099	0.0036	1%	1%	
		>150 FM	425	21.7549	3.4743	3.5559	0.6017	53%	4%	
	Winter	<75 FM	125	5.8278	3.3515	1.4279	0.8385	5%	3%	
		75-150 FM	3							
		>150 FM	549	6.5458	1.2719	0.7718	0.1576	78%	6%	
South	Summer	<75 FM	142	0		0				
		75-150 FM	64	0		0				
		>150 FM	200	18.8562	3.5182	3.1085	0.6257	53%	8%	
	Winter	<75 FM	15	0		0				
		>150 FM	59	7.6881	2.2297	1.3109	0.4315	64%	12%	
2007										
North	Winter	<75 FM	14	0.2421	0.2346	0.0909	0.0913	67%	25%	
		75-150 FM	1							
		>150 FM	493	7.0747	2.1471	0.7948	0.2469	89%	5%	
South	Winter	<75 FM	1							
		>150 FM	77	3.0965	0.8246	0.3866	0.1053	100%		

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

T. Other Shelf Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	1.3821	0.2323	0.2710	0.0452	62%	7%
75-150 FM			302	10.6768	1.9741	1.2215	0.2270	84%	4%	
>150 FM			425	0.0341	0.0114	0.0056	0.0019	2%	1%	
Winter		<75 FM	125	0.1467	0.0983	0.0360	0.0240	9%	2%	
		75-150 FM	3							
		>150 FM	549	0.1985	0.0810	0.0234	0.0095	55%	11%	
South	Summer	<75 FM	142	25.6923	8.6549	8.9132	3.0005	88%	4%	
		75-150 FM	64	67.7517	11.2226	29.2496	4.8194	81%	5%	
		>150 FM	200	1.3403	0.7732	0.2210	0.1277	12%	8%	
	Winter	<75 FM	15	516.9261	194.9448	118.3017	41.7910	96%	3%	
		>150 FM	59	2.1556	1.6351	0.3675	0.2801	45%	21%	
2007	North	Winter	<75 FM	14	0.0434	0.0432	0.0163	0.0164	100%	
75-150 FM			1							
>150 FM			493	0.4226	0.1156	0.0475	0.0130	52%	25%	
South	Winter	<75 FM	1							
		>150 FM	77	0.0319	0.0205	0.0040	0.0025	1%	1%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

U. Other Slope Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.0123	0.0040	0.0024	0.0008	5%	3%
75-150 FM			302	1.1656	0.2583	0.1334	0.0295	54%	12%	
>150 FM			425	3.3933	1.3180	0.5546	0.2148	38%	9%	
Winter		<75 FM	125	0	0	0%				
		75-150 FM	3							
		>150 FM	549	9.9289	1.3891	1.1707	0.1649	62%	5%	
South	Summer	<75 FM	142	2.5190	2.4398	0.8739	0.8559	89%	11%	
		75-150 FM	64	3.6810	1.6894	1.5891	0.7006	83%	7%	
		>150 FM	200	23.4699	7.9544	3.8690	1.2659	33%	7%	
	Winter	<75 FM	15	0	0					
		>150 FM	59	22.1774	9.9147	3.7814	1.6844	35%	13%	
2007	North	Winter	<75 FM	14	0	0				
75-150 FM			1							
>150 FM			493	4.5139	0.5836	0.5071	0.0668	41%	4%	
South	Winter	<75 FM	1							
		>150 FM	77	24.0748	7.1449	3.0058	0.8711	39%	6%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

V. Pacific Halibut

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	31.2231	4.2690	6.1233	0.8069	100%	
75-150 FM			302	45.7773	7.1174	5.2374	0.7788	100%		
>150 FM			425	2.6411	0.7915	0.4317	0.1274	100%		
Winter		<75 FM	125	35.1605	7.3724	8.6146	1.9915	100%		
		75-150 FM	3							
		>150 FM	549	8.2127	1.0473	0.9684	0.1208	100%		
South	Summer	<75 FM	142	0.1008	0.1007	0.0350	0.0352	100%		
		75-150 FM	64	0		0				
		>150 FM	200	0		0				
	Winter	<75 FM	15	0		0				
		>150 FM	59	0.1892	0.1350	0.0323	0.0227	100%		
2007	North	Winter	<75 FM	14	1.5754	0.8303	0.5917	0.3271	100%	
75-150 FM			1							
>150 FM			493	17.6913	2.3473	1.9875	0.2480	100%		
South	Winter	<75 FM	1							
		>150 FM	77	0		0				

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

W. Pacific Hake

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	43.0168	7.3417	8.4363	1.4544	99%	1%
			75-150 FM	302	19.0036	8.3137	2.1742	0.9585	100%	
			>150 FM	425	13.9890	1.9326	2.2865	0.3088	100%	
		Winter	<75 FM	125	1.9729	1.6431	0.4834	0.4038	100%	
			75-150 FM	3						
			>150 FM	549	57.6809	5.2908	6.8012	0.6339	100%	
	South	Summer	<75 FM	142	104.3418	12.7507	36.1984	4.4498	100%	
			75-150 FM	64	25.1707	7.6020	10.8667	3.3930	100%	
			>150 FM	200	15.4917	3.5999	2.5538	0.5756	100%	
		Winter	<75 FM	15	9.4302	3.9209	2.1582	0.9955	100%	
		>150 FM	59	48.4784	11.6259	8.2659	1.8430	100%		
2007	North	Winter	<75 FM	14	1.2098	0.6708	0.4544	0.2475	100%	
			75-150 FM	1					100%	
			>150 FM	493	33.0433	3.9419	3.7121	0.4650	100%	
	South	Winter	<75 FM	1						
			>150 FM	77	36.9045	8.6819	4.6077	1.1324	100%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

X. Pacific Ocean Perch

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0		0%	
			75-150 FM	302	0.5764	0.5599	0.0659	0.0636	93%	6%
			>150 FM	425	0.0430	0.0234	0.0070	0.0038	2%	1%
	Winter	<75 FM	125	0.0040	0.0040	0.0010	0.0010	46%	27%	
		75-150 FM	3							
		>150 FM	549	1.0788	0.1815	0.1272	0.0217	16%	3%	
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0.0024	0.0024	0.0004	0.0004	100%	
Winter	<75 FM	15	0		0					
	>150 FM	59	0		0					
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0.6735	0.1865	0.0757	0.0211	15%	3%
	South	Winter	<75 FM	1						
			>150 FM	77	0.0157	0.0130	0.0020	0.0016	100%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

Y. Petrale Sole

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
North	Summer	<75 FM	1003	10.0084	1.1049	1.9628	0.2182	7%	1%	
		75-150 FM	302	3.3501	0.9863	0.3833	0.1135	5%	1%	
		>150 FM	425	0.0080	0.0038	0.0013	0.0006	5%	3%	
	Winter	<75 FM	125	5.7033	1.6434	1.3974	0.4182	7%	2%	
		75-150 FM	3							
		>150 FM	549	1.5243	0.5133	0.1797	0.0608	1%	0%	
South	Summer	<75 FM	142	6.6613	0.8700	2.3109	0.3103	5%	1%	
		75-150 FM	64	7.1280	1.7966	3.0773	0.7832	4%	1%	
		>150 FM	200	2.4065	0.8989	0.3967	0.1490	19%	3%	
	Winter	<75 FM	15	38.3672	15.7792	8.7806	3.1001	14%	4%	
		75-150 FM								
		>150 FM	59	0.2881	0.1771	0.0491	0.0290	0%	0%	
2007										
North	Winter	<75 FM	14	5.7534	0.8441	2.1608	0.3738	8%	1%	
		75-150 FM	1							
		>150 FM	493	0.7819	0.1635	0.0878	0.0187	1%	0%	
South	Winter	<75 FM	1							
		>150 FM	77	1.3333	0.5178	0.1665	0.0647	1%	0%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

Z. Pink Salmon

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0			
			75-150 FM	302	0		0			
			>150 FM	425	0		0			
		Winter	<75 FM	125	0		0			
			75-150 FM	3						
			>150 FM	549	0		0			
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0		0			
		Winter	<75 FM	15	0		0			
			>150 FM	59	0		0			
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1			0			
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

AA. Sablefish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
North	Summer	<75 FM	1003	8.5771	1.1372	1.6821	0.2278	45%	4%	
		75-150 FM	302	38.7855	8.0478	4.4375	0.9169	22%	4%	
		>150 FM	425	13.1264	2.1176	2.1455	0.3469	8%	1%	
	Winter	<75 FM	125	0.8291	0.6980	0.2031	0.1727	87%	10%	
		75-150 FM	3							
		>150 FM	549	19.1386	1.9044	2.2566	0.2311	16%	2%	
South	Summer	<75 FM	142	1.1590	0.6820	0.4021	0.2335	62%	11%	
		75-150 FM	64	3.1034	1.3473	1.3398	0.5662	23%	6%	
		>150 FM	200	1.8691	0.5397	0.3081	0.0903	2%	1%	
	Winter	<75 FM	15	0		0				
		75-150 FM								
		>150 FM	59	9.9670	3.8595	1.6994	0.6869	8%	3%	
2007										
North	Winter	<75 FM	14	0.0908	0.0917	0.0341	0.0333	39%	22%	
		75-150 FM	1							
		>150 FM	493	19.2164	3.4993	2.1588	0.4078	18%	3%	
South	Winter	<75 FM	1							
		>150 FM	77	7.3470	3.0091	0.9173	0.3801	8%	3%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

BB. Shortspine Thornyhead

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.0019	0.0013	0.0004	0.0002	1%	0%
75-150 FM			302	1.4126	0.5633	0.1616	0.0648	29%	8%	
>150 FM			425	5.5556	0.7697	0.9081	0.1290	12%	1%	
Winter		<75 FM	125	0		0				
		75-150 FM	3							
		>150 FM	549	4.4273	0.4727	0.5220	0.0563	17%	2%	
South	Summer	<75 FM	142	0		0				
		75-150 FM	64	0.0098	0.0098	0.0042	0.0043	13%	7%	
		>150 FM	200	1.1752	0.3183	0.1937	0.0533	3%	1%	
	Winter	<75 FM	15	0		0				
		>150 FM	59	7.7966	3.5033	1.3294	0.6228	28%	11%	
2007	North	Winter	<75 FM	14	0		0			
75-150 FM			1							
>150 FM			493	3.8972	0.5254	0.4378	0.0614	12%	1%	
South	Winter	<75 FM	1							
		>150 FM	77	0.5933	0.2460	0.0741	0.0303	2%	1%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

CC. Sockeye Salmon

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0			
			75-150 FM	302	0		0			
			>150 FM	425	0		0			
		Winter	<75 FM	125	0		0			
			75-150 FM	3						
			>150 FM	549	0		0			
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0		0			
		Winter	<75 FM	15	0		0			
			>150 FM	59	0		0			
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1			0			
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

DD. Starry Flounder

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.1104	0.0345	0.0216	0.0068	7%	2%
			75-150 FM	302	0	0	0	0%		
			>150 FM	425	0.0024	0.0024	0.0004	0.0004	85%	18%
		Winter	<75 FM	125	0.0024	0.0024	0.0006	0.0006	1%	1%
			75-150 FM	3						
			>150 FM	549	0	0	0	0		
	South	Summer	<75 FM	142	0.0069	0.0059	0.0024	0.0021	1%	1%
			75-150 FM	64	0	0	0	0		
			>150 FM	200	0	0	0	0		
		Winter	<75 FM	15	0	0	0	0	0%	
		>150 FM	59	0	0	0	0	0%		
2007	North	Winter	<75 FM	14	0.0454	0.0458	0.0170	0.0182	66%	25%
			75-150 FM	1						
			>150 FM	493	0	0	0	0		
	South	Winter	<75 FM	1						
			>150 FM	77	0	0	0	0	0%	

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

EE. Steelhead

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0			
			75-150 FM	302	0		0			
			>150 FM	425	0		0			
		Winter	<75 FM	125	0		0			
			75-150 FM	3						
			>150 FM	549	0		0			
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0		0			
		Winter	<75 FM	15	0		0			
			>150 FM	59	0		0			
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

FF. Unidentified Salmon Species

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0		0			
75-150 FM			302	0		0				
>150 FM			425	0		0				
Winter		<75 FM	125	0		0				
		75-150 FM	3							
		>150 FM	549	0		0				
South	Summer	<75 FM	142	0		0				
		75-150 FM	64	0		0				
		>150 FM	200	0		0				
	Winter	<75 FM	15	0		0				
		>150 FM	59	0		0				
2007	North	Winter	<75 FM	14	0		0			
75-150 FM			1			0				
>150 FM			493	0		0				
South	Winter	<75 FM	1							
		>150 FM	77	0		0				

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

GG. Widow Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006										
North	Summer	<75 FM	1003	0.0013	0.0010	0.0003	0.0002	8%	5%	
		75-150 FM	302	0.0161	0.0139	0.0018	0.0016	5%	1%	
		>150 FM	425	0		0		0%		
	Winter	<75 FM	125	0.0139	0.0139	0.0034	0.0034	100%		
		75-150 FM	3							
		>150 FM	549	0.0197	0.0109	0.0023	0.0013	53%	16%	
South	Summer	<75 FM	142	0		0				
		75-150 FM	64	0.0619	0.0411	0.0267	0.0178	7%	6%	
		>150 FM	200	0		0		0%		
	Winter	<75 FM	15	4.0477	2.5693	0.9263	0.6255	100%		
		>150 FM	59	0		0				
2007										
North	Winter	<75 FM	14	0		0				
		75-150 FM	1							
		>150 FM	493	0.1782	0.0691	0.0200	0.0078	55%	16%	
South	Winter	<75 FM	1							
		>150 FM	77	0		0				

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

HH. Yelloweye Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.0655	0.0364	0.0128	0.0071	55%	16%
			75-150 FM	302	0.1832	0.0616	0.0210	0.0072	77%	9%
			>150 FM	425	0		0		0%	
		Winter	<75 FM	125	0		0			
			75-150 FM	3						
			>150 FM	549	0.0020	0.0020	0.0002	0.0002	100%	
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0		0			
		Winter	<75 FM	15	0		0			
		>150 FM	59	0		0				
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0		0			
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 6. (cont.) Ratio estimate and standard error for the discarded pounds of 35 selected species or species groups by area, depth and season from January 1, 2006 through April 30, 2007 in observed groundfish tows. Combinations of area, depth and season with insufficient data have been omitted. Where quantities could not be estimated, cells were left blank.

II. Yellowtail Rockfish

Year	Area	Season	Depth	Number of tows	Discarded lb of species per hour of towing		Discarded lb of species per 100 lbs of retained groundfish		Percent of species discarded from total catch of species	
					lb/hr	se	ration	se	%	se
2006	North	Summer	<75 FM	1003	0.3489	0.3118	0.0684	0.0612	17%	13%
			75-150 FM	302	1.0615	0.8160	0.1214	0.0941	16%	11%
			>150 FM	425	0.0182	0.0182	0.0030	0.0030	92%	8%
		Winter	<75 FM	125	0		0		0%	
			75-150 FM	3						
			>150 FM	549	0		0			
	South	Summer	<75 FM	142	0		0			
			75-150 FM	64	0		0			
			>150 FM	200	0		0			
		Winter	<75 FM	15	10.2753	6.5301	2.3516	1.6413	60%	23%
			>150 FM	59	0		0			
2007	North	Winter	<75 FM	14	0		0			
			75-150 FM	1						
			>150 FM	493	0.0117	0.0076	0.0013	0.0009	30%	15%
	South	Winter	<75 FM	1						
			>150 FM	77	0		0			

Table 7. Ratio estimate and standard error for the total bycatch of six overfished species per 100 pounds of retained groundfish by area, depth, and season in groundfish tows from January 1, 2006 through April 30, 2007.

A. Bocaccio Rockfish

Year	Season	Depth	North		South		Coastwide	
			100 lb of retained groundfish		100 lb of retained groundfish		100 lb of retained groundfish	
			ratio	se	ratio	se	ratio	se
2006								
	Summer	<75 FM	0.0411	0.0210	1.4652	1.0836	0.1340	0.0729
		75-150 FM	0.0929	0.0669	8.5728	2.4004	0.7552	0.2073
		>150 FM	0		0.2026	0.1008	0.0596	0.0299
	Winter	<75 FM	0.0007	0.0007	1.3390	0.9551	0.2198	0.1631
		75-150 FM						
		>150 FM	0.0040	0.0036	0.0021	0.0021	0.0039	0.0033
	All	<75 FM	0.0382	0.0194	1.4413	0.9009	0.1410	0.0683
		75-150 FM	0.0922	0.0665	8.5728	2.4004	0.7503	0.2059
		>150 FM	0.0023	0.0021	0.1573	0.0782	0.0311	0.0147
2007								
	Winter	<75 FM	0				0	
		75-150 FM						
		>150 FM	0.0006	0.0005	0.0291	0.0294	0.0047	0.0042
	All	<75 FM	0				0	
		75-150 FM						
		>150 FM	0.0006	0.0005	0.0291	0.0294	0.0047	0.0042

B. Canary Rockfish

Year	Season	Depth	North		South		Coastwide	
			100 lb of retained groundfish		100 lb of retained groundfish		100 lb of retained groundfish	
			ratio	se	ratio	se	ratio	se
2006								
	Summer	<75 FM	0.4000	0.1343	0.0163	0.0070	0.3751	0.1257
		75-150 FM	0.3475	0.0731	0.1568	0.0437	0.3327	0.0673
		>150 FM	0.0006	0.0006	0.0035	0.0036	0.0015	0.0011
	Winter	<75 FM	0.7531	0.1763	2.9394	1.3097	1.1107	0.2620
		75-150 FM						
		>150 FM	0.0016	0.0015	0		0.0015	0.0013
	All	<75 FM	0.4260	0.1252	0.5490	0.2648	0.4351	0.1177
		75-150 FM	0.3479	0.0726	0.1568	0.0437	0.3332	0.0670
		>150 FM	0.0012	0.0009	0.0027	0.0028	0.0015	0.0009
2007								
	Winter	<75 FM	0				0	
		75-150 FM						
		>150 FM	0.0034	0.0016	0		0.0030	0.0014
	All	<75 FM	0				0	
		75-150 FM						
		>150 FM	0.0034	0.0016	0		0.0030	0.0014

Table 7. (cont.) Ratio estimate and standard error for the total bycatch of six overfished species per 100 pounds of retained groundfish by area, depth, and season in groundfish tows from January 1, 2006 through April 30, 2007.

C. Cowcod Rockfish

Year	Season	Depth	North		South		Coastwide	
			100 lb of retained groundfish		100 lb of retained groundfish		100 lb of retained groundfish	
			ratio	se	ratio	se	ratio	se
2006								
	Summer	<75 FM	0		0.2374	0.1557	0.0155	0.0102
		75-150 FM	0		0.2462	0.1037	0.0192	0.0082
		>150 FM	0		0.0202	0.0092	0.0059	0.0027
	Winter	<75 FM	0		0		0	
		75-150 FM						
		>150 FM	0		0		0	
	All	<75 FM	0		0.1940	0.1274	0.0142	0.0093
		75-150 FM	0		0.2462	0.1037	0.0191	0.0082
		>150 FM	0		0.0156	0.0071	0.0029	0.0013
2007								
	Winter	<75 FM	0				0	
		75-150 FM						
		>150 FM	0		0		0	
	All	<75 FM	0				0	
		75-150 FM						
		>150 FM	0		0		0	

D. Darkblotched Rockfish

Year	Season	Depth	North		South		Coastwide	
			100 lb of retained groundfish		100 lb of retained groundfish		100 lb of retained groundfish	
			ratio	se	ratio	se	ratio	se
2006								
	Summer	<75 FM	0.0485	0.0068	0.0021	0.0015	0.0455	0.0064
		75-150 FM	0.1939	0.0355	0.1107	0.0752	0.1875	0.0332
		>150 FM	0.5119	0.1073	0.4960	0.1318	0.5071	0.0850
	Winter	<75 FM	0.0017	0.0011	0		0.0014	0.0009
		75-150 FM						
		>150 FM	2.6679	0.3017	2.6622	0.9500	2.6675	0.2875
	All	<75 FM	0.0451	0.0063	0.0017	0.0012	0.0419	0.0059
		75-150 FM	0.1938	0.0352	0.1107	0.0752	0.1875	0.0330
		>150 FM	1.7546	0.1802	0.9859	0.2428	1.6113	0.1532
2007								
	Winter	<75 FM	0.0178	0.0151			0.0174	0.0147
		75-150 FM						
		>150 FM	1.3848	0.1629	0.0149	0.0072	1.1887	0.1403
	All	<75 FM	0.0178	0.0151			0.0174	0.0147
		75-150 FM						
		>150 FM	1.3848	0.1629	0.0149	0.0072	1.1887	0.1403

Table 7. (cont.) Ratio estimate and standard error for the total bycatch of six overfished species per 100 pounds of retained groundfish by area, depth, and season in groundfish tows from January 1, 2006 through April 30, 2007.

E. Pacific Ocean Perch

			North		South		Coastwide	
			100 lb of retained groundfish		100 lb of retained groundfish		100 lb of retained groundfish	
Year	Season	Depth	ratio	se	ratio	se	ratio	se
2006								
	Summer	<75 FM	0.0014	0.0005	0		0.0013	0.0005
		75-150 FM	0.0707	0.0637	0		0.0652	0.0587
		>150 FM	0.3944	0.1690	0.0004	0.0004	0.2783	0.1194
	Winter	<75 FM	0.0021	0.0011	0		0.0018	0.0009
		75-150 FM	0.0143	0.0027	0			
		>150 FM	0.7763	0.1584	0		0.7124	0.1454
	All	<75 FM	0.0015	0.0005	0		0.0014	0.0004
		75-150 FM	0.0703	0.0632	0		0.0648	0.0584
		>150 FM	0.6145	0.1159	0.0003	0.0003	0.5002	0.0944
2007								
	Winter	<75 FM	0				0	
		75-150 FM						
		>150 FM	0.5152	0.1082	0.0020	0.0016	0.4417	0.0928
	All	<75 FM	0				0	
		75-150 FM						
		>150 FM	0.5152	0.1082	0.0020	0.0016	0.4417	0.0928

F. Yelloweye Rockfish

			North		South		Coastwide	
			100 lb of retained groundfish		100 lb of retained groundfish		100 lb of retained groundfish	
Year	Season	Depth	ratio	se	ratio	se	ratio	se
2006								
	Summer	<75 FM	0.0232	0.0080	0		0.0217	0.0075
		75-150 FM	0.0274	0.0075	0		0.0252	0.0070
		>150 FM	0.0004	0.0003	0		0.0003	0.0002
	Winter	<75 FM	0		0		0	
		75-150 FM						
		>150 FM	0.0002	0.0002	0		0.0002	0.0002
	All	<75 FM	0.0215	0.0074	0		0.0199	0.0069
		75-150 FM	0.0272	0.0075	0		0.0251	0.0069
		>150 FM	0.0003	0.0002	0		0.0002	0.0001
2007								
	Winter	<75 FM	0				0	
		75-150 FM						
		>150 FM	0		0		0	
	All	<75 FM	0				0	
		75-150 FM						
		>150 FM	0		0		0	

Table 8. Ratio estimator and standard error for the total bycatch of seven rebuilding species per one-hundred pounds of total retained groundfish by area, observer program year, and depth. Standard errors cannot be calculated when there is only one tow in a category. ***When comparing discard rates through the years, recognize that the calculation used to estimate total retained groundfish differs between 2006/2007 and all previous years. Additional species, including certain skates and sharks, and spiny dogfish were included in 2006 and 2007 estimates of total retained groundfish while those species were not included in previous year's calculations.**

A. Bocaccio

		Sept. 2001 - Aug. 2002		Sept. 2002 - Aug. 2003		Sept. 2003 - Aug. 2004		Jan. - Dec. 2004		Jan. - Dec. 2005		Jan. - Dec. 2006*		Jan. - Apr. 2007*	
		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish	
Area	Depth (fm)	ratio	s.e	ratio	s.e	ratio	se								
North	0-74.9	0.0117	0.0084	0.0000		0.0009	0.0009	0.0008	0.0008	0.0182	0.0118	0.0382	0.0194	0.0000	
	75-149.9	0.0765	0.0519	0.0088	0.0052	0.0000		0.0000		0.0897	0.0230	0.0922	0.0665		
	> 150	0.0077	0.0033	0.0141	0.0079	0.0027	0.0010	0.0017	0.0008	0.0010	0.0005	0.0023	0.0021	0.0006	0.0005
South	0-74.9	0.6862	0.2803	0.2005	0.1660	2.0446	0.8953	3.1903	1.3430	1.5114	0.3715	1.4413	0.9009		
	75-149.9	6.8989	1.5478	0.5094	0.5094	0.5757	0.4486	0.3075	0.2147	11.5057	3.3581	8.5728	2.4004		
	> 150	0.1342	0.0440	0.1631	0.0768	0.0100	0.0026	0.0333	0.0130	0.3652	0.1233	0.1573	0.0782	0.0291	0.0294
Coastwide	0-74.9	0.1121	0.0411	0.0283	0.0234	0.1315	0.0566	0.1301	0.0527	0.0991	0.0247	0.1410	0.0683	0.0000	
	75-149.9	1.3969	0.3185	0.0118	0.0060	0.0220	0.0178	0.0206	0.0168	0.2458	0.0537	0.7503	0.2059		
	> 150	0.0512	0.0152	0.0547	0.0218	0.0045	0.0010	0.0103	0.0036	0.0867	0.0289	0.0311	0.0147	0.0047	0.0042

B. Canary Rockfish

		Sept. 2001 - Aug. 2002		Sept. 2002 - Aug. 2003		Sept. 2003 - Aug. 2004		Jan. - Dec. 2004		Jan. - Dec. 2005		Jan. - Dec. 2006*		Jan. - Apr. 2007*	
		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish	
Area	Depth (fm)	ratio	s.e	ratio	s.e	ratio	se								
North	0-74.9	0.6010	0.0992	0.3688	0.0904	0.3467	0.0573	0.2926	0.0488	0.2996	0.0717	0.4260	0.1252	0.0000	
	75-149.9	1.0054	0.1111	1.3494	0.2394	0.5011	0.1585	0.4819	0.1448	0.5839	0.1205	0.3479	0.0726		
	> 150	0.0132	0.0052	0.0059	0.0015	0.0055	0.0020	0.0052	0.0018	0.0017	0.0006	0.0012	0.0009	0.0034	0.0016
South	0-74.9	0.1011	0.0560	0.0015	0.0015	0.1817	0.1082	1.0891	0.8505	0.1136	0.0668	0.5490	0.2648		
	75-149.9	0.2675	0.0862	0.0207	0.0207	0.0000		0.0000		0.0354	0.0258	0.1568	0.0437		
	> 150	0.0072	0.0051	0.0000		0.0003	0.0002	0.0002	0.0002	0.0004	0.0003	0.0027	0.0028	0.0000	
Coastwide	0-74.9	0.5266	0.0852	0.3170	0.0777	0.3361	0.0542	0.3249	0.0579	0.2894	0.0679	0.4351	0.1177		
	75-149.9	0.8626	0.0890	1.3415	0.2381	0.4820	0.1525	0.4467	0.1340	0.5763	0.1188	0.3332	0.0670		
	> 150	0.0111	0.0038	0.0043	0.0011	0.0042	0.0015	0.0039	0.0013	0.0014	0.0005	0.0015	0.0009	0.0030	0.0014

Table 8. (cont) Ratio estimator and standard error for the total bycatch of seven rebuilding species per one-hundred pounds of total retained groundfish by area, observer program year, and depth. Standard errors cannot be calculated when there is only one tow in a category. ***When comparing discard rates through the years, recognize that the calculation used to estimate total retained groundfish differs between 2006/2007 and all previous years. Additional species, including certain skates and sharks, and spiny dogfish were included in 2006 and 2007 estimates of total retained groundfish while those species were not included in previous year's calculations.**

C. Cowcod Rockfish

		Sept. 2001 - Aug. 2002		Sept. 2002 - Aug. 2003		Sept. 2003 - Aug. 2004		Jan. - Dec. 2004		Jan. - Dec. 2005		Jan. - Dec. 2006*		Jan. - Apr. 2007*	
		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish	
Area	Depth (fm)	ratio	s.e	ratio	s.e	ratio	se	ratio	se	ratio	se	ratio	se	ratio	se
North	0-74.9	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
	75-149.9	0.0006	0.0006	0.0000		0.0000		0.0000		0.0000		0.0000			
	> 150	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000		0.0000	
South	0-74.9	0.0090	0.0056	0.0195	0.0134	0.1441	0.0633	0.2051	0.0943	0.0563	0.0264	0.1940	0.1274		
	75-149.9	0.4083	0.1715	2.9184	2.9184	2.0640	1.8264	1.1024	1.1232	0.8772	0.2295	0.2462	0.1037		
	> 150	0.0104	0.0061	0.0000		0.0002	0.0002	0.0001	0.0001	0.0035	0.0025	0.0156	0.0071	0.0000	
Coastwide	0-74.9	0.0013	0.0008	0.0028	0.0019	0.0092	0.0040	0.0083	0.0037	0.0031	0.0014	0.0142	0.0093	0.0000	
	75-149.9	0.0795	0.0336	0.0175	0.0175	0.0789	0.0709	0.0740	0.0680	0.0120	0.0036	0.0191	0.0082		
	> 150	0.0036	0.0021	0.0000		0.0000	0.0000	0.0000	0.0000	0.0008	0.0006	0.0029	0.0013	0.0000	

D. Widow Rockfish

		Sept. 2001 - Aug. 2002		Sept. 2002 - Aug. 2003		Sept. 2003 - Aug. 2004		Jan. - Dec. 2004		Jan. - Dec. 2005		Jan. - Dec. 2006*		Jan. - Apr. 2007*	
		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish	
Area	Depth (fm)	ratio	s.e	ratio	s.e	ratio	se								
North	0-74.9	0.0846	0.0617	0.0123	0.0050	0.0087	0.0036	0.0948	0.0327	0.0004	0.0002	0.0033	0.0008	0.0000	
	75-149.9	2.3398	1.8712	0.0431	0.0302	0.0000		0.0000		0.0777	0.0688	0.0391	0.0378		
	> 150	0.0105	0.0036	0.0254	0.0101	0.0246	0.0132	0.0260	0.0126	0.0175	0.0078	0.0026	0.0008	0.0366	0.0113
South	0-74.9	0.0008	0.0008	0.0000		0.0074	0.0074	0.0174	0.0128	0.0149	0.0093	0.1688	0.1123		
	75-149.9	0.1395	0.0717	0.0000		0.0000		0.0000		0.0000		0.3837	0.2110		
	> 150	0.0126	0.0051	0.0000		0.0164	0.0161	0.0130	0.0128	0.0065	0.0065	0.3617	0.1310	0.0000	
Coastwide	0-74.9	0.0721	0.0525	0.0106	0.0043	0.0086	0.0034	0.0917	0.0314	0.0012	0.0005	0.0154	0.0083	0.0000	
	75-149.9	1.9139	1.5088	0.0429	0.0300	0.0000		0.0000		0.0767	0.0679	0.0658	0.0387		
	> 150	0.0113	0.0029	0.0184	0.0073	0.0226	0.0107	0.0225	0.0098	0.0149	0.0061	0.0694	0.0245	0.0314	0.0097

Table 8. (cont) Ratio estimator and standard error for the total bycatch of seven rebuilding species per one-hundred pounds of total retained groundfish by area, observer program year, and depth. Standard errors cannot be calculated when there is only one tow in a category. ***When comparing discard rates through the years, recognize that the calculation used to estimate total retained groundfish differs between 2006/2007 and all previous years. Additional species, including certain skates and sharks, and spiny dogfish were included in 2006 and 2007 estimates of total retained groundfish while those species were not included in previous year's calculations.**

E. Yelloweye Rockfish

		Sept. 2001 - Aug. 2002		Sept. 2002 - Aug. 2003		Sept. 2003 - Aug. 2004		Jan. - Dec. 2004		Jan. - Dec. 2005		Jan. - Dec. 2006*		Jan. - Apr. 2007*	
		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish	
Area	Depth (fm)	ratio	s.e	ratio	s.e	ratio	se	ratio	se	ratio	se	ratio	se	ratio	se
North	0-74.9	0.0031	0.0009	0.0122	0.0052	0.0118	0.0076	0.0113	0.0068	0.0119	0.0044	0.0215	0.0074	0.0000	
	75-149.9	0.0209	0.0160	0.0032	0.0013	0.0042	0.0030	0.0041	0.0028	0.0121	0.0036	0.0272	0.0075		
	> 150	0.0004	0.0003	0.0001	0.0001	0.0007	0.0005	0.0007	0.0004	0.0012	0.0010	0.0003	0.0002	0.0000	
South	0-74.9	0.0000		0.0251	0.0201	0.0158	0.0114	0.0000		0.0000		0.0000			
	75-149.9	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000			
	> 150	0.0022	0.0022	0.0000	0.0768	0.0000	0.0161	0.0000		0.0000		0.0000		0.0000	
Coastwide	0-74.9	0.0027	0.0008	0.0140	0.0053	0.0120	0.0071	0.0109	0.0065	0.0113	0.0041	0.0199	0.0069	0.0000	
	75-149.9	0.0169	0.0129	0.0032	0.0013	0.0041	0.0029	0.0038	0.0026	0.0119	0.0036	0.0251	0.0069		
	> 150	0.0010	0.0008	0.0001	0.0001	0.0006	0.0004	0.0005	0.0003	0.0009	0.0008	0.0002	0.0001	0.0000	

F. Darkblotched Rockfish

		Sept. 2001 - Aug. 2002		Sept. 2002 - Aug. 2003		Sept. 2003 - Aug. 2004		Jan. - Dec. 2004		Jan. - Dec. 2005		Jan. - Dec. 2006*		Jan. - Apr. 2007*	
		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish	
Area	Depth (fm)	ratio	s.e	ratio	s.e	ratio	se								
North	0-74.9	0.1526	0.0377	0.0884	0.0242	0.2189	0.0464	0.2514	0.0503	0.0878	0.0226	0.0451	0.0063	0.0178	0.0151
	75-149.9	2.2729	0.4341	0.6956	0.1275	1.7907	0.6202	1.1014	0.3912	0.4348	0.2554	0.1938	0.0352		
	> 150	0.9524	0.1153	0.8759	0.1302	1.9692	0.3299	1.6663	0.2874	0.9797	0.0807	1.7546	0.1802	1.3848	0.1629
South	0-74.9	0.0000		0.0012	0.0012	0.0000	0.0114	0.0000		0.0005	0.0006	0.0017	0.0012		
	75-149.9	0.1216	0.0519	0.0000		0.0000		0.0000		0.0000		0.1107	0.0752		
	> 150	0.1538	0.0535	0.1234	0.0540	0.3648	0.1307	0.2688	0.1016	0.5691	0.1517	0.9859	0.2428	0.0149	0.0072
Coastwide	0-74.9	0.1299	0.0322	0.0761	0.0208	0.2049	0.0435	0.2412	0.0483	0.0831	0.0214	0.0419	0.0059	0.0174	0.0147
	75-149.9	1.8565	0.3471	0.6914	0.1268	1.7222	0.5966	1.0209	0.3696	0.4288	0.2519	0.1875	0.0330		
	> 150	0.6780	0.0783	0.6706	0.0958	1.5737	0.2507	1.2879	0.2123	0.8831	0.0711	1.6113	0.1532	1.1887	0.1403

Table 8. (cont) Ratio estimator and standard error for the total bycatch of seven rebuilding species per one-hundred pounds of total retained groundfish by area, observer program year, and depth. Standard errors cannot be calculated when there is only one tow in a category. ***When comparing discard rates through the years, recognize that the calculation used to estimate total retained groundfish differs between 2006/2007 and all previous years. Additional species, including certain skates and sharks, and spiny dogfish were included in 2006 and 2007 estimates of total retained groundfish while those species were not included in previous year's calculations.**

G. Pacific Ocean Perch

		Sept. 2001 - Aug. 2002		Sept. 2002 - Aug. 2003		Sept. 2003 - Aug. 2004		Jan. - Dec. 2004		Jan. - Dec. 2005		Jan. - Dec. 2006*		Jan. - Apr. 2007*	
		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish		Species catch per 100 lb of retained groundfish	
Area	Depth (fm)	ratio	s.e	ratio	s.e	ratio	se								
North	0-74.9	0.0663	0.0374	0.0007	0.0003	0.0131	0.0091	0.0117	0.0081	0.0188	0.0060	0.0015	0.0005	0.0000	
	75-149.9	4.0499	1.0601	0.1189	0.0827	3.8539	2.6087	3.2785	2.2711	0.3672	0.2162	0.0703	0.0632		
	> 150	1.0865	0.1992	1.0954	0.1614	0.9674	0.1282	1.0400	0.1377	0.6617	0.0959	0.6145	0.1159	0.5152	0.1082
South	0-74.9	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000			
	75-149.9	0.0000		0.0000		0.0000		0.0000		0.0000		0.0000			
	> 150	0.0001	0.0001	0.0000		0.0476	0.0476	0.0378	0.0379	0.0000		0.0003	0.0003	0.0020	0.0016
Coastwide	0-74.9	0.0565	0.0318	0.0006	0.0003	0.0123	0.0085	0.0112	0.0077	0.0178	0.0057	0.0014	0.0004	0.0000	
	75-149.9	3.2661	0.8509	0.1182	0.0822	3.7065	2.5090	3.0387	2.1190	0.3622	0.2132	0.0648	0.0584		
	> 150	0.7132	0.1311	0.7966	0.1173	0.7407	0.0974	0.7686	0.1013	0.5060	0.0735	0.5002	0.0944	0.4417	0.0928